CB HORIZONS

November 1962
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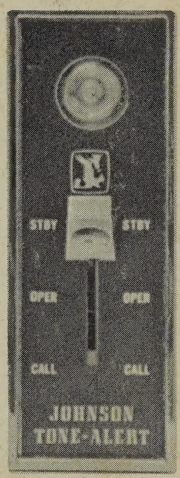
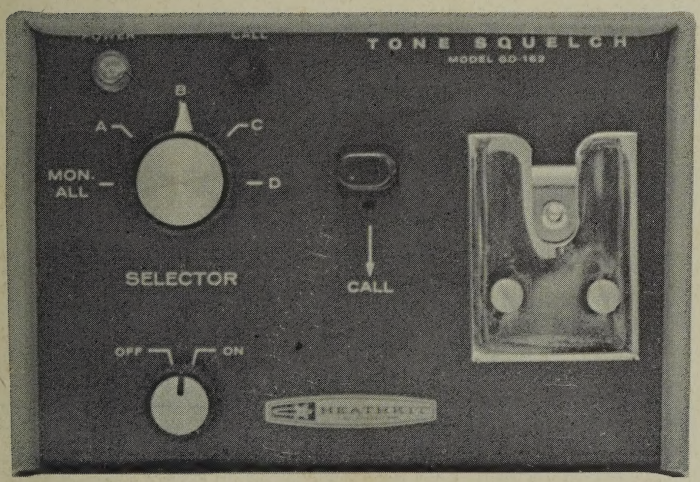
($.55 in Canada)





TWO-WAY RADIO FOR BUSINESS AND PLEASURE

SPECIAL 14 PAGE SECTION—SELECTIVE CALLING COMES TO CB

Speech Compressors—Are They Legal? • Understanding Those Technical Specifications • Tech Tips For The Shack • Complete CB News Coverage From Coast-to-Coast, and More

NEW FREQUENCY SYNTHESIZER

With International's new crystal controlled frequency synthesizer you can switch instantly to any one of the 23 CB channels. Each channel uses the same crystal for transmitting and receiving. A 24th position is provided as a spare. Illuminated dial. Self contained power supply. Unit matches Model 100 and Model 50 Executives. Meets FCC requirements for frequency tolerance and spurious radiation.

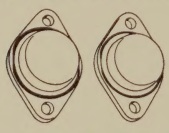
Complete with interconnecting cables and instructions $159.50

NEW MODEL 100 A EXECUTIVE TRANSCEIVER

Now International brings you an advanced design Executive transceiver, for **more reliable mobile operation,** featuring a **transistor power supply, new perforated metal cabinet,** and equipped with a **new rugged dynamic microphone.** This is the latest in the famous line of International Executive transceivers. The first commercially available CB unit to make use of a high frequency crystal filter to achieve and permanently guarantee receiver selectivity for the life of the equipment. Twelve crystal controlled channels. Two crystal controlled receive positions. Dual conversion superheterodyne receiver tuning all 23 channels. Built-in calibration circuit. Transistor power supply operates from 6/12 vdc or 115 vac. Push-to-talk operation. Certified tolerance ± .005%.

Model 100 A, complete with 1 transmit crystal, 1 receive crystal, and microphone.... $199.50

Check these new features.



- **Transistor Power Supply**

- **New Dynamic Microphone**

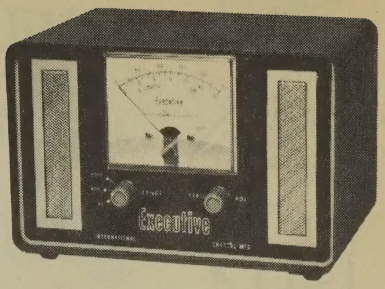
for Outstanding Performance

Citizens Band licensees with International equipped stations know the unquestioned superiority and advantages of Executive transceivers and their system engineered accessories.

EXTERNAL SPEAKER S/METER

The perfect companion for the International Executive Model 100. Utilizes a high impedance vacuum tube volt meter circuit. Connects to socket on rear of transceiver. S/meter reads in three ranges Brown cabinet, brown and silver panel matches Model 100 Executive. Dimensions: 5½" H. x 8½" W. x 7" D.

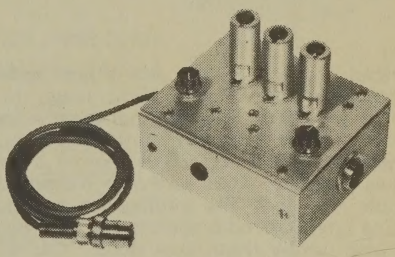
Complete with interconnecting cable.....$49.50



EXECUTIVE SPEECH CLIPPER/FILTER AMPLIFIER

A microphone amplifier designed to increase average modulation . . . limits modulation peaks . . . filters audio frequencies above 2500 cycles. Permits arms-length microphone operation. Power requirements: 12 vac or 12 vdc.

Complete with interconnecting cable.....$36.50



12.6 VAC, 2 AMPERE POWER UNIT

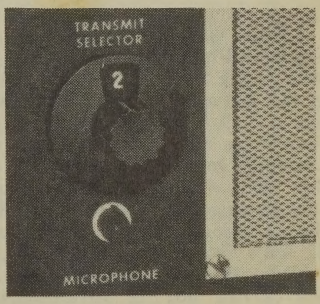
Base station power unit for Speech Clipper/Amplifier. Operates from 115 vac. Provides 12.6 vac at 2 amperes.

Complete with mounting chassis, power cord, fuse, switch.....$12.50

NEW ILLUMINATED DIAL ASSEMBLY

A new 12-position dial, designed and engineered by International as an accessory for the Model 100 Executive transceiver. Illuminated numerals assist in selecting any one of 12 crystal controlled transmit channels. Simple to install. Dial assembly may also be used with any 12-position, 30 degree switch.

Complete with instructions.....$11.25



...SELECT INTERNATIONAL!

See International Executive transceivers and accessories today at your authorized International dealer.

INTERNATIONAL
CRYSTAL MANUFACTURING CO., INC.
18 NORTH LEE • OKLAHOMA CITY, OKLA.

Turn to Card Insert—Page 12—Now!

OZZIE'S MAIL-BOX

Ozzie—

A friend of mine showed me a past issue of your magazine, the March 1962 issue, to be exact. In your Mail Box section there appears a sarcastic letter, strongly criticizing you. I agree with that person! CB is merely a waste of frequency space. It is sort of a hiding space for people who lack the intelligence or "guts" to become amateur radio operators. Your magazine is also run by these lazy slobs. You would be doing everyone a lot of good by stopping publication at once.

Bayarr Devuron
Muriel, Nebraska

Bayarr—

Hummm. I dare say that CB'ers as a cross section of American life have every bit the average intelligence as the hams you insist on holding we CB'ers up to. Actually, I for one am becoming more than a little sick of being held up as a "pauper ham" by every critic of CB radio. CB'ers have a right to self identity . . . and I don't feel that even a small percentage of the CB'ers consider themselves "junior-grade hams" or wish to be considered hams. Once and for all (please!) let's leave the ham and CB'er argument buried. It can serve no good, and certainly each service has its advantages. CB Horizons has always tried to keep this definition a clear-cut one. For our money, we know quite a few CB'ers whose technical and operating ability is far superior to 90 percent of what you see and hear in the ham ranks.

Ozzie

Dear Ozzie—

The August issue was great. After pouring over all of those operating specifications in the Directory I end up with my head spinning and very little understanding of what I have read. How about an article in the very near future explaining how to read the specs, so that a person with little or no technical knowledge can figure out which set is most sensitive, selective, etc.?

Norman S. Reynolds, KED0121
Kerrville, Texas

Norm—

Is this issue soon enough? Check the Table of Contents for our "Understanding All Those Tech Terms," on page 6.

Ozzie

Ozzie—

Received your August issue, and it was my first. I think it is tops. This Directory idea is an excellent way of keeping up with the new equipment, as well as the old gear, once each year. As a new reader, I would like to request articles on improving the performance on existing rigs.

Wm. J. Reagan, KED0783
Galveston, Texas

Bill—

Glad to have you on board. We think you will find numerous "rig improvement" articles in CBH, just check through some back issues some of the older CB'ers in Galveston have on file. That's one of our prime areas of interest—improving CB system performance so that more of us get maximum performance for our money.

Ozzie

Dear Ozzie—

My wife and I were on our way home with our 24 foot vacation trailer after going to Seattle and the World's Fair. Nineteen miles north of Chico, California we had a tire blow, our second in two days, and we were without a spare. So I unhooked and we headed for Chico. Along the way I contacted a gent named Jim Burney and another named Dell Cannady who told me where to find a tire for my trailer wheel. Before we could believe it Dell (12W2520) and Jim (KFC1077) were out there helping us in the 102 degree heat, replacing our blown tire. They did a terrific job in just a matter of minutes and wouldn't take a cent for their help. Since I have a bad heart, I can't tell them how much I appreciated the time and effort. Hats off to these two men from the Golden Empire CB Club, who take their CB seriously.

Wm. H. Hankin, KEJ0820
Santa Barbara, California

Hank—

Your letter was picked for publication because it is symbolic of the everyday job being done by CB'ers from coast-to-coast. The brotherhood of CB radio is growing everyday, and every new CB'er feels as you do—his personal use of communications is something he wouldn't trade for all of the tea in China!

Ozzie

Dear Ozzie—

Just a note of thanks from the no longer suffering XYL of a CB nut. The conversion of the noise limiter (the Makino circuit) for the Lafayette HE20A was superb. My hubby is one of those who believes the squelch knob on our HE20A was for looks only. Actually, he was afraid to turn it to "squelch" for fear we would miss something! Thanks to you, for the ridiculous sum of 24 cents, we now have an almost completely noiseless set! It is unbelievable to have one of those big trucks roar by us—and no noise! It's equally unbelievable to be driving downtown in heavy traffic, where the noise always read over a 9 on the meter, and have no noise! Your directions for the Makino Circuit were clear and easy to follow, even for us amateurs. Thank you again.

Nano McFadden, 10Q1487
Dallas, Texas

Nano—

A big Texas Howdy and thank you to you, M'am!

Ozzie

NEW

antenna specialists brand

Black Beauty

Fiberglas CB antennas

now you can whip two problems most common to fiberglas antenna performances!

First: through the "black magic" of exclusive Thermofit PVC process, brittleness and cracking are eliminated. It also provides a resiliency that makes this CB antenna much more resistant to constant abrasions.

Second: The durable, black finish is inconspicuous yet gives an impressive, clean, classic look to your car. It looks good when you install it . . . looks just as good even after long, hard use. Center loaded and only 48″ high. Choice of mounts. The price is no problem either! They're available right now at your CB supplier or, for further information, write to

"Stripes of Quality"®

the antenna specialists co.

12435 Euclid Avenue • Cleveland 6, Ohio
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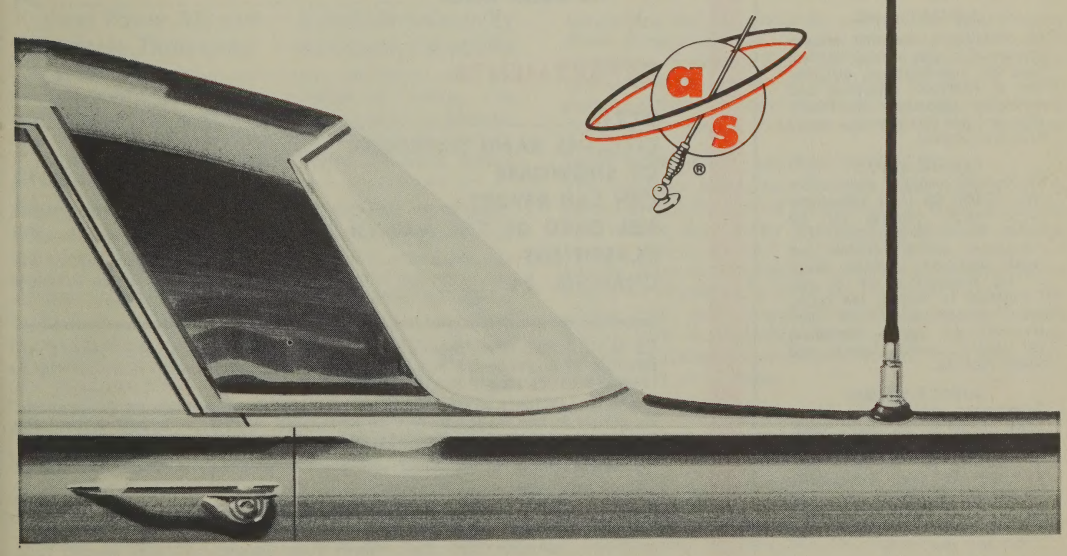

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Volume 2—Number 11

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CIRCULATION

CB Horizons magazine serves more than 78,000 CB radio enthusiasts every month, covering all 50 states, Puerto Rico, Canada, U.S. Possessions and 19 Central and South American countries where 27 mc transceivers are in use. Circulation is through the mails, and "over-the-counter" at more than 600 CB dealers throughout the United States, Canada and South America.

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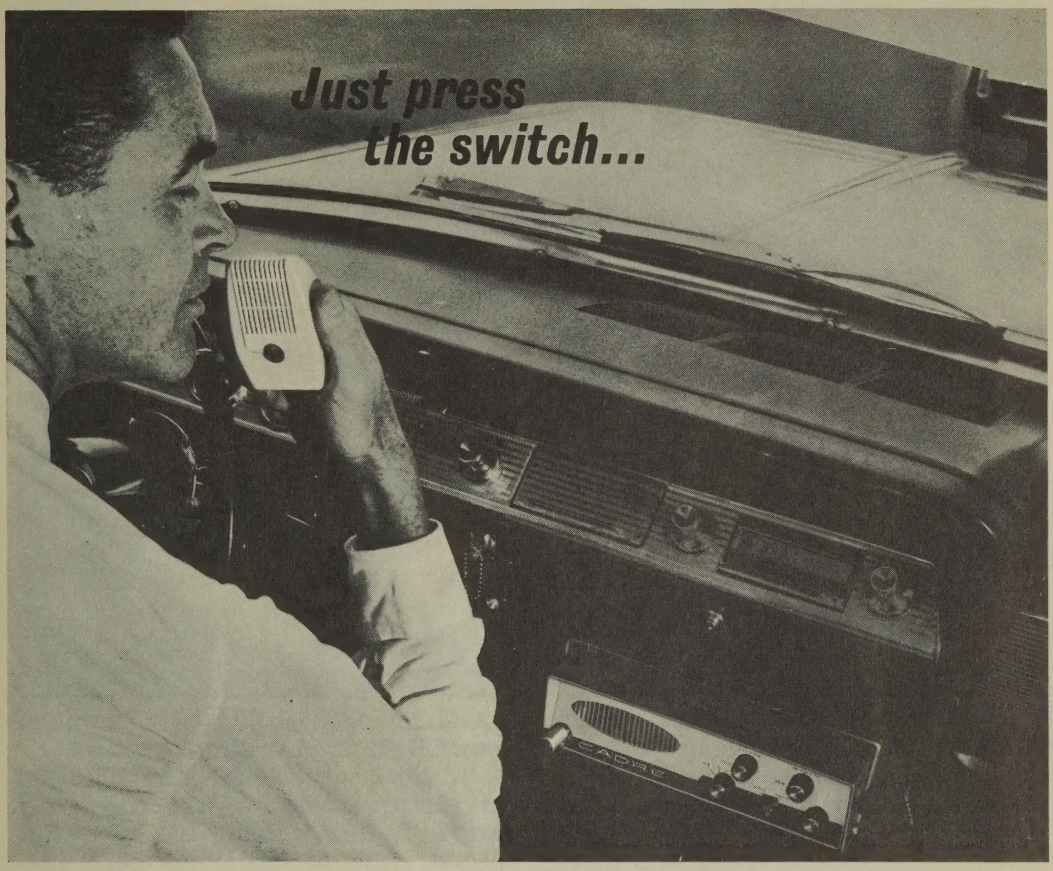
COVER: Selective Calling. Is this the promised savior of CB radio? What it does and how it does it is described in detail in this month's special report. On the cover, top to bottom, left to right, Metrotek Monocall, E. F. Johnson Tone Call, Heath Tone Squelch, Miratel Selecto Call.



you're "on-the-air" with this powerful transistor CB 2-way radio

New Cadre '510' 5-watt, 5-channel Transceiver

Highest Power Allowed • Excellent Selectivity
Solid-State Throughout • Maximum Reliability

When you press the switch you're on-the-air with the cleanest 27Mc "talk" power possible — 5-watts. You can reach vehicles and base stations instantly . . . dependably . . . up to 20 miles over land, 30 miles over water. 5 crystal-controlled transmit/receive channels assure perfect contact every time.

MOST SELECTIVE — DUAL-CONVERSION SUPERHET

Release the switch—you're still on-the-air. (Don't let the silence fool you! Adjustable squelch shuts out extraneous signals for noise-free standby reception.) The sensitive receiver circuit — a dual-conversion superheterodyne — captures weakest signals, and reproduces them with crisp, clear intelligibility. No adjacent channel interference. Highest selectivity with tuned ceramic filters. Electrical interference virtually eliminated with the '510's' effective automatic noise limiter.

MOST RELIABLE — 100% SOLID-STATE DESIGN

Whether pressing or releasing the mike switch, you're controlling the most reliable, maintenance-free Citizens Band transceiver. It's completely transistorized — 18 transistors, 8 diodes. Keep it "ON" safely all day—no heat problems, no tubes to burn out and replace, lowest current drain prolongs vehicle battery life. Solid-state components absorb road punishment without damage.

MOST COMPACT — EASIEST TO INSTALL

The smallest, full-power Citizens Band transceiver is easiest to install. Its 3⅛" height never steals leg room in a vehicle; fits smartly under the dash of the smallest foreign compact. And it can be used anywhere — vehicle, base station, field, marine craft. A dual-power supply — 12VDC/110-220VAC — is built right into the Cadre '510'. Add a portable pack accessory (model 500-1) with rechargeable batteries and you have the lightest, portable 5-watt radio (9½ Lbs. with batteries) for pleasure, or business.

Cadre '510' complete with dynamic microphone, set of matched Channel 11 crystals, universal mounting bracket, AC & DC cords . . . $199.95.

See the nearest Cadre distributor for a free demonstration, or write:

CADRE INDUSTRIES CORP. COMMERCIAL PRODUCTS DIVISION ENDICOTT, N.Y. AREA CODE 607, 748-3373

Canada: Tri-Tel Assoc., Ltd., 81 Sheppard Ave., West Willowdale, Ont. **Export:** Morhan Exporting Corp., 458 Broadway, N. Y. 13, N. Y.

Turn to Card Insert—Page 12—Now!

TONE CALLING COMES TO CB

The importance of "selective calling" in the Class D CB field cannot be overestimated. Some 90 days ago *The Heath Company,* Benton Harbor, Michigan introduced their new Selective Call unit. This was followed just days later by an announcement from *E. F. Johnson* covering their new Tone Alert unit. About this time *Miratel Electronics,* Minneapolis, announced their "Selecto-Call" system. Most recently, *Metrotek Electronics,* Raleigh, North Carolina announced their "Monocall" unit.

To the neophyte CB'er, or the CB radio user with no more than a passing interest and knowledge in electronics, these rapid fire announcements must have sent him reeling like a dazed ringfighter!

What . . . after all is said and done . . . *is selective calling?*

And, how does it fit into the scope of your CB radio operations?

CB Horizons has felt the blunt of just such questions for the entire 90 day period. In self defense, perhaps, this special issue of CBH has been prepared. We hope to answer for you many of the questions you have concerning this new innovation in CB radio. But more than that, we hope to interest you sufficiently in this type of communications accessory that you are driven to your local CB dealer where this equipment is just beginning to go on display.

We feel, as we are certain you will after you have finished reading this report, that *selective tone calling* offers considerable improvement to the CB radio user's system, regardless of whether he uses his radio for personal *or* business reasons.

WHAT IT IS, AND WHY?

WHO SAYS YOU DON'T NEED IT!

1,000,001 USES FOR SELECTIVE CALLING

Because CB radio has such a great cross section of the American population using it for personal and business communications, no one use of selective calling will appeal to all CB'ers. In fact, it is probably safe to estimate that less than 50 percent of the users of CB radio will ever *give a hang* about selective calling.

It is entirely possible, however, that you would be interested if only someone were to implant in your mind a practical application of selective calling as it would pertain to your own use of CB radio. That is the purpose of this section of the "selective calling report;" to suggest new and many here-to-fore unsuggested uses for selective calling.

AT THE HOME

If you are a typical licensee of CB radio, you have 3 units licensed. One of these is in your car, another is in your home, and the third hangs sort of loose for additional boating, friends, etc. uses. Most of your personal communications is between you and your home, or mobile to base. And, if you are a typical red-blooded American male, your wife is not nearly as addicted to CB radio as you are! You use it to talk with friends around town, you use it to participate with your local club in coordinating public events such as parades and crowds, and *then* finally, you use it to talk with your wife when you are on your way home from work.

In between times your wife doesn't really want to listen to the chatter on channel 11 (or which ever channel you use) on the off chance that you will "call-in" with some important message. In fact, she probably knows (by your instructions) to turn the radio on at a pre-set time each day, the same time that you normally leave work and get into the mobile.

How many times have you driven all the way home calling your base station in vain only to arrive home and find that your wife was standing right next to the radio . . . with the volume turned way down, or the set completely off! Probably more often than you care to remember.

And being an ardent CB buff, you find it hard to understand why she didn't turn it on. Well just between us fellows . . . she probably listened to the chatter on the channel for five or ten minutes, and then with the telephone ringing and the kids asking when dinner would be ready, she turned it down . . . or off, in desperation.

Selective calling will solve this problem. With a selective calling attachment at the base, and another one in the car, she could have the transceiver on all day long and never hear a sound until you hit the switch in your mobile, sending out that special coded electronic impulse and turning her unit from "quiet" to receive.

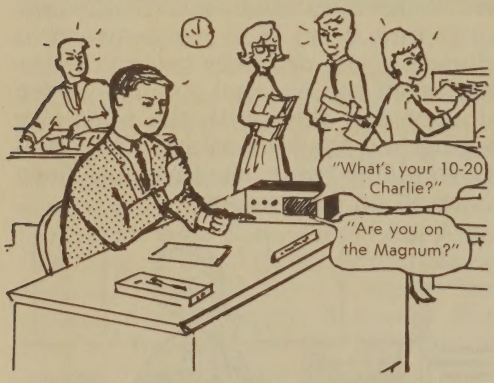
Turn to Card Insert—Page 12—Now!

Of course this works in reverse. If she is in the car, she probably has the same feeling about the blasting of the chatter on channel 11. It simply distracts too much from her driving and that coupled with the kids chatter in the back seat is enough to drive her to reach over and turn it down . . . or off.

The answer? Selective calling, once again. Her mobile unit remains quiet until you call with the same specially coded electronic impulse which turns her mobile transceiver on . . . for the first time . . . from quiet to operate.

IN THE OFFICE

No one will ever know how many potential users of CB radio in the business vein have balked at having a channel full of garbage continually upsetting their office routine. The business user wants to hear just one thing . . . his unit or units calling. He doesn't care to hear "what's your 10-20 Charlie" or "Man are you loud today . . . are you on the Magnum?"



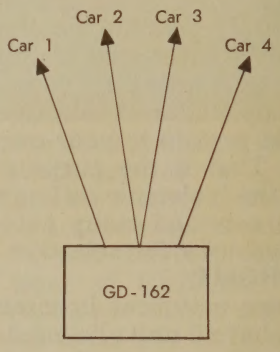
So he decided against buying CB, for now. Or, perhaps he buys CB, or bought CB sometime ago, when the channels were not so crowded. Now he's dissatisfied.

Again, selective calling is the answer. From mobile to base, with an untrained office girl watching the radio, the only radio transmissions heard in the office are those from the selective calling equipped mobiles. Ah the peace and tranquillity this brings to any office after months of "what's your 10-20 Charlie."

On the other end of the circuit, the salesman or delivery man in the mobile probably acts like most of us every-time a signal breaks through a normally operated squelch. He reaches for the volume control and momentarily takes his attention off the road while he tries to hear if he is the one being called. Most of the time he is not being called.

BUT . . . with selective calling installed in the communications circuit, the mobile unit once again remains quiet until the base station calling him, and only him, transmits that special electronic impulse which turns on his receiver from quiet to operate.

This would be an excellent opportunity to mention the advantages of the Heath unit in directing calls to a specific mobile unit. As it stands, the Heath unit has a four position switchable tone impulse. This means that you can select the actual tone combination you wish to transmit by simply rotating a switch.



Heath GD-162 And Four Mobiles

Converted to simple operating terms, the base station can have up to four mobiles operating at once, each one equipped to activate (turn on) with a different tone code. For example, you could call only mobile unit number 1 by having its receiving selective-call adjusted so as to respond only to position number 1 on your base station selective call. And if you want to call only mobile number 3, you switch over to position number 3 on the selective call dial at the base station and push the call button. Only mobile number 3 will respond, and so on.

The Metrotek Monocall can be easily converted to similar operation, with up to six mobiles controlled from one Monocall unit.

Continued—Page 13

IS THIS THE MONTH TO SUBSCRIBE TO CB HORIZONS?

YES ---AND HERE'S WHY!

(1) In next month's issue (December) we will announce the promised price increase of **CB Horizons** subscriptions to $5.00 per year. However, everyone subscribing this month (prior to November 10) can be assured of the low-low $4.00 per year rate.

(2) CB Horizons is now accepting orders (no money please) for the 1963 fact and data filled 250 page (approx.) CB Call-Book/Handbook. With the current FCC processing rate, we expect the 1963 Call-Book to list more than 100,000 brand new CB'ers since January 1 of this year alone. PLUS—more than 3,000 towns and cities **and** their local monitoring channels. A listing to more than 500 CB clubs. A brand new CB Dealer section, and much-much more!

HERE'S HOW YOU ORDER THE 1963 CB CALL-BOOK

(1) Use the top form on the reverse side of this card to place your order for the **1963 CB Call-Book and a Sub to CBH.** By placing your order for a new or re-newal subscription to CBH at the same time (at the low $4.00 rate) your price on the **1963 Call-Book** is just $3.50 (send no money—we will bill you on December 1).

OR,

(2) Use the middle form on the reverse side to order your **1963 CB Call-Book** now, reserving your copy. Send no money. We will bill you for the full purchase price ($4.50) on December 1.

REMEMBER — SEND NO CASH OR PAYMENT NOW — CBH WILL BILL YOU FOR YOUR 1963 CALL-BOOK IN DECEMBER. BY PLACING YOUR ORDER NOW, HOWEVER, YOU ARE GUARANTEED OF A COPY IN JANUARY '63. THE 1962 "Q" BOOK IS COMPLETELY SOLD OUT — DON'T BE LEFT OUT IN '63!

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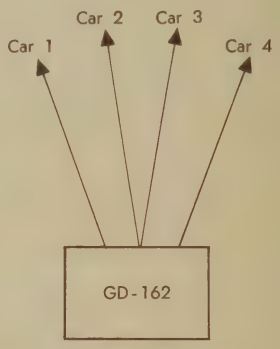

Heath GD-162 And Four Mobiles

Converted to simple operating terms, the base station can have up to four mobiles operating at once, each one equipped to activate (turn on) with a different tone code. For example, you could call only mobile unit number 1 by having its receiving selective-call adjusted so as to respond only to position number 1 on your base station selective call. And if you want to call only mobile number 3, you switch over to position number 3 on the selective call dial at the base station and push the call button. Only mobile number 3 will respond, and so on.

The Metrotek Monocall can be easily converted to similar operation, with up to six mobiles controlled from one Monocall unit.

Continued—Page 13

IS THIS THE MONTH TO SUBSCRIBE TO CB HORIZONS?

YES ---AND HERE'S WHY!

(1) In next month's issue (December) we will announce the promised price increase of **CB Horizons** subscriptions to $5.00 per year. However, everyone subscribing this month (prior to November 10) can be assured of the low-low $4.00 per year rate.

(2) CB Horizons is now accepting orders (no money please) for the 1963 fact and data filled 250 page (approx.) CB Call-Book/Handbook. With the current FCC processing rate, we expect the 1963 Call-Book to list more than 100,000 brand new CB'ers since January 1 of this year alone. PLUS—more than 3,000 towns and cities **and** their local monitoring channels. A listing to more than 500 CB clubs. A brand new CB Dealer section, and much-much more!

HERE'S HOW YOU ORDER THE 1963 CB CALL-BOOK

(1) Use the top form on the reverse side of this card to place your order for the **1963 CB Call-Book and a Sub to CBH.** By placing your order for a new or re-newal subscription to CBH at the same time (at the low $4.00 rate) your price on the **1963 Call-Book** is just $3.50 (send no money—we will bill you on December 1).

OR,

(2) Use the middle form on the reverse side to order your **1963 CB Call-Book** now, reserving your copy. Send no money. We will bill you for the full purchase price ($4.50) on December 1.

REMEMBER — SEND NO CASH OR PAYMENT NOW — CBH WILL BILL YOU FOR YOUR 1963 CALL-BOOK IN DECEMBER. BY PLACING YOUR ORDER NOW, HOWEVER, YOU ARE GUARANTEED OF A COPY IN JANUARY '63. THE 1962 "Q" BOOK IS COMPLETELY SOLD OUT — DON'T BE LEFT OUT IN '63!

Order Your 250 Page (plus) KBA-KJB 1963 CB Call-Book Now — Be Assured of a Copy in '63!

Bonus Issues — Plus '63 Call-Book Order

.....Enclosed my check for $4 Please enter my subscription for 14 months of CB Horizons. **I am mailing this before October 24.**

.....Enclosed my check for $4 Please enter my subscription for 13 months of CB Horizons. **I am mailing this before October 31.**

.....Enclosed my check for $4 Please enter my subscription for 12 issues of CB Horizons. **I am mailing this before November 10.**

Name..... CB Call.....

Address .....

City/Town..... Zone..... State.....

.....(**check here**) **YES—enter my order for the 1963 CB Call-Book. Bill me for $3.50 on December 1.**

Airmail today to: CB Horizons
P.O. Box 1557
Oklahoma City 1, Oklahoma

1963 Call-Book Order Form — For Present Subscribers

.....YES—enter my order for a copy of the complete **1963 CB Horizons CB Call-Book Annual.** This is the big book which will list all of the 100,000 or so new CB'ers licensed from January 1 to December 31, 1962. Bill me for $4.50 on December 1, 1962. **I understand that this card reserves me a book.**

Name..... CB Call.....

Address .....

City/Town..... Zone..... State .....

Airmail today to: CB Call-Book, 1963
P.O. Box 1557
Oklahoma City 1, Oklahoma

CB MOBILE HAND-BOOK ORDER FORM

.....QUICK—**rush me my copy of the 140 page CB Mobile Handbook** that everyone is talking about on the air. I've checked with my local dealer and he's all sold out RUSH-RUSH-RUSH! **$2.95 enclosed.**

Name..... CB Call.....

Address .....

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Airmail today to: CB Mobile Handbook
P.O. Box 1557
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WHAT?
you don't have your copy yet?

WHY?
don't you have your copy yet?

WHO?
will get your copy if you don't?

THE CB MOBILE HANDBOOK IS OUT!

More than 140 pages—filled cover to cover with everything you need to know about CB mobile radio installation, operation and maintenance.

OVER 10,000 COPIES SOLD IN 30 DAYS!

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ONLY $2.95 AT YOUR DEALER OR FROM CBH

USE HANDY TEAR-OUT ORDER FORM TO THE LEFT . . . OR . . .

SEE YOUR LOCAL CB DEALER TODAY (if he's out—he should order some more!)

1,000,001 Uses—Continued

BASE TO BASE

You have 3 or more offices, stores or other types of communication points which you carry on conversations with. You not only do not want your sub-base stations to be bothered with the other noise on your channel, you may not particularly want Unit 2 bothered by a call to unit 3. The solution? Selective calling again, of course. Through proper equipping at each station, unit three can call unit 1, or unit four can call unit 2, and the others on the circuit are not only *not* bothered, they don't even necessarily know the conversation is going on! Just take our previous example of one base and up to six mobiles and substitute the extra base stations (units 2, 3, etc.) for the mobiles. The principle is the same.

MOBILE TO MOBILE

Here again equipping different mobiles with different selective calling code combinations will allow mobile unit 1 to talk with mobile unit 3, and mobile unit 2 will drive along completely oblivious to the whole affair.

CLUB CALLING FUNCTIONS

Selective calling also has a place with the nation's CB clubs. It is possible to envision a day in the not too distant future when local groups will list not only their local monitoring channel, but also their *local calling code.* For example, an entire contingent of local club members, equipped with selective calling, can go about their business at home on a quiet Saturday night without the constant chatter of channel 7 blasting away, confident that if any type of local emergency or interesting event occurs, a properly appointed open-channel (i.e. a channel monitored without selective call) monitor will alert them through selective calling.

Local civil defense, fire department and other volunteer groups using CB radio will find the selective call attachment a real boon. How many small fire departments have talked themselves out of investing in CB radio for their volunteer members, as a means of alerting, because they couldn't have the privacy they needed to guarantee

Continued—Page 16

Selective Calling Techniques

–STAFF–

Selective tone calling is not a new innovation. It is merely new to CB. Commercial radio users in the VHF FM bands have used it for years. But, like all other units in the FM business radio services, the selective call units were (and are) expensive. Much too expensive to be seriously considered for CB radio adaptation.

So the CB manufacturers were forced to simplify the equipment, at the same time retaining the disirable selective call features, in order to bring the price structure of the selective call units down to a level that CB'ers could afford.

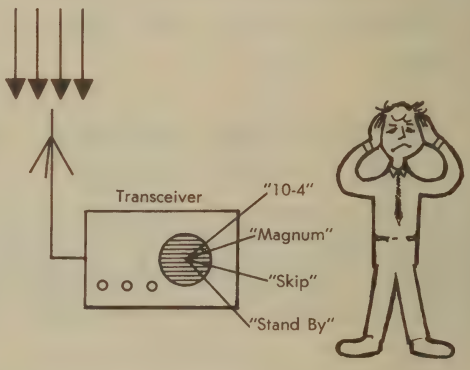
This is what has taken so long to accomplish. Four long years of CB radio growth has triggered this explosion in selective calling.

With intolerable crowding of CB frequencies now apparent in nearly all sections of the United States, selective calling has come to the rescue just in the nick of time, or so it would seem.

WHAT IT DOES

Selective calling is just what it sounds like. Through the attachment of a selective calling unit to your transceiver, you are able to "signal" by electronic impulse one or more of your mobile units, or one or more specially equipped base station units. Use of selective calling does not in any way garble or scramble your speech. In fact, selective calling has nothing to do with your transmitter. You still must wait until the channel is clear to call, and you are still able to listen in to everyone else on the channel, *if you wish.*

BUT, with selective calling attachments on your transceivers, you *do not have* to listen to anyone but your own units. In other words, with selective calling in your CB communications system, your transceiver-receivers remain *absolutely quiet* until their squelch is triggered by a specially coded electronic impulse from another of your own system transceivers. Diagram 1 illustrates a common CB transceiver installation with any number of signals "on-channel" breaking the squelch.



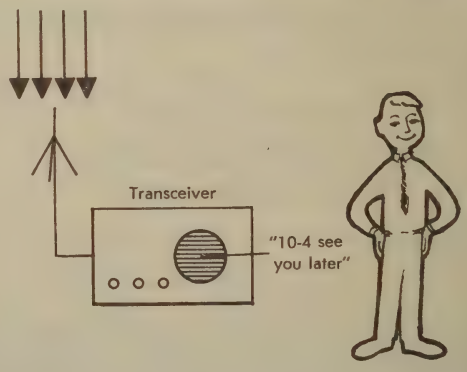


Diagram two shows the same transceiver-receiver completely immune to

Continued—Page 28

MARK *Static Sheath**

Eliminates Noisy Precipitation Static*...Improves Signal-to-Noise Ratio
Affords up to 20 db Operating Gain . . . Increases Receiver Sensitivity
Extends Intelligible Coverage. Easiest to install.

INCREASE COVERAGE

MARK II SUPER BEACON FIXED STATION ANTENNA
with exclusive Static Sheath*

Design advantages of the new **MARK II** now make it possible to step up the efficiency of your CB operation, and maintain clearer communication over greater distances. 19 feet overall, the omni-directional **MARK II** makes fullest use of the 20-foot legal length limit. Requires no radials or skirts. Provides 1 db gain over ground plane antennas. Employs a full half-wave radiator voltage fed through a special launcher-matcher cable section for excellent impedance match over the entire citizens band. Low angle radiation insures utmost efficiency and maximum contact with mobile units.

Improved mechanical features and extra-rugged base support pipe add to its reliability. Simplified clamp mounting makes installation easy.

Precipitation Static** is caused by charged particles in the air impinging in a continuous stream on metal antenna radiator surfaces. It is revealed by a continuous hissing background noise. The patented **Mark Static Sheath is a tough, durable, dielectric plastic covering that acts as an electrical insulator and eliminates static interference caused by the precipitation effect.

MARK HW HELIWHIP®* MOBILE and MARINE ANTENNAS
Top-Loaded, 50-Ohm Load . . . with Static Sheath *

Shortened mechanical structure and other Mark features bring new efficiency, new compactness, new convenience to CB communication. Molded Fiberglas, with Static Sheath.* Designed to replace lengthy stainless steel whips. Far superior to whip and loading-coil combinations. Can be located on upper portion of vehicle such as trunk lid, cowl, fender or hood to obtain proper ground plane. Single-hole mounting. 18″, 3′, 4′ and 6′ mobile models. **Heliwhip** Marine Antenna (6′ long) eliminates need for metal ground plane.

See Your B & K Distributor or Write for Catalog HW19-CB

*U.S. Pat. 2,966,679
U.S. Process Pat. 2,938,210

MARK HELIWHIP®*

Another Fine Product Line by

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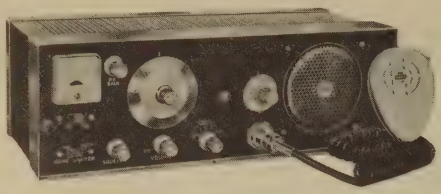
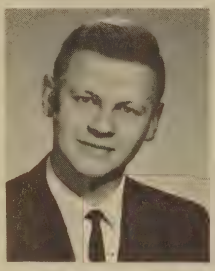
Dept. CB-5, 1801 W. Belle Plaine
Chicago 13, Illinois

Turn to Card Insert—Page 12—Now!

ECI Courier



CB pace-setter . . . the Courier! An excellent transceiver loaded with "plus" features. Here's what you get: Triple Conversion - 12 Channel Transmit - 23 Channel Tunable Receive - 4 Ch. Fixed Receive *Without Crystals!* - Built-in S & RF Meter - Built-in RF Gain Control - Built-in Squelch Control - Adjustable Noise Limiter - 100% Modulation - Crystal Spotting - More than 3 Watts Output - Nuvistor Front End - Unitized Chassis - Beautiful and Rugged Cabinet . . . ideally suited for mobile or base installation. Priced at just $199.50.



"Sandy" says— You'll know you have the best when you're on the air with a Courier. Act now . . . and take advantage of Echo Communications' special credit plan. Send the entire purchase price of $199.50 and I'll pay the freight!

LOOK AT THIS DEAL!

$19.95 Down

only $16.50 per month

For One Year

E.C.I. LINEAR AMPLIFIER

Boosts power on any low-powered transmitter! This outstanding new development by E.C.I. can be used with the 6 meter and 10 meter bands. Amplifies your signal 30 times, makes it loud and clear. (Now illegal on 11 meter band in U.S.A.) Price, just $159.95. Buy on convenient terms . . . $14.95 Down, $12.08 a month!

ORDER TODAY!

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☐ O. K. "Sandy", ship me_____E.C.I. Courier(s). Enclosed is $19.95 down payment for each set. Monthly payments will be $16.50 for each. ☐ Payment in full enclosed.
☐ Please ship_____Linear Amplifier(s). $14.95 enclosed, monthly payments to be $12.08. ☐ Payment in full enclosed.

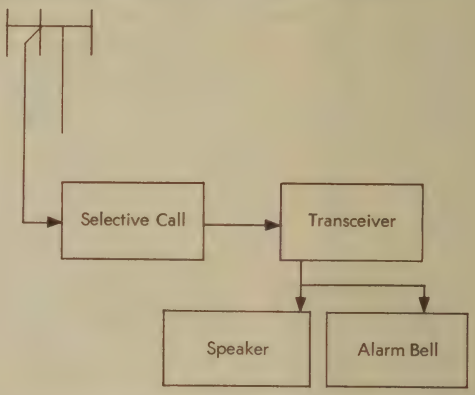
Name ----------
Call (optional)----------
Address ----------
City & State----------

1,000,001 Uses—Continued

that a roving mobile wouldn't get them all out of bed at 2 AM with a "what's your 10-20 Charlie?" blasting open their squelch? Selective calling solves this.

SPECIAL SELECTIVE CALL ACCESSORIES

Selective calling opens up an entire new vista of CB accessories not even today off the drawing boards. Special signs which light up and stay lit until turned off will read-off "You have been called." The sign, you see, is activated by a relay connected to the selective call unit. If you are not present to answer your call, the sign at least will let you know you were called! This can be simplified to a light alone.



Yet another relay-operated useful accessory will be a bell or buzzer which you can locate anyplace in the house or office. When a selective call signal comes in the relay clicks over and presto—the buzzer buzzes or the bell rings sending you off like a flash for your transceiver to answer the call. This is obviously not practical on normal squelch operated units for any signal coming on the channel would sound the buzzer or bell.

ABOUT CCM'S

The CB Horizons CCM program is expanding so fast that a period of re-adjustment is now underway. Consequently, the CCM column has been absent from the last two issues. CCM Coordinator John Krejc, 2W-4586, promises a special enlarged section next month, in the December issue.

3 GREAT NEW PRODUCTS

from the manufacturers of the e.c.i. Courier 1-M

LINEAR AMPLIFIER

List . . . $159.50

BOOST YOUR SIGNAL ON ANY LOW-POWERED TRANSMITTER!

This outstanding, new development by e.c.i. can be used with the 6 meter & 10 meter bands. Amplifies your signal 30 times, makes it loud and clear . . . *Illegal on 11 meter band in the U.S.A.*

Check These Exclusive Features;

- COMPLETELY SELF-CONTAINED
- NO INTERNAL CONNECTIONS REQUIRED
- INCREASE RF POWER ON ANY LOW-POWERED TRANSMITTER WITHOUT DISTORTION
- USE ON FM, AM, CW, SSB & DSB

PORT-A-LAB

List . . . $44.95

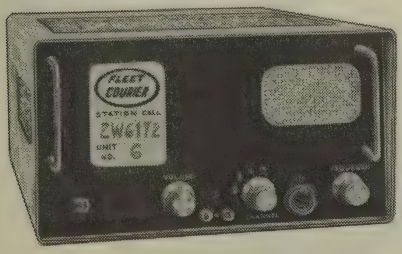
THE PORTABLE CB CHECK-OUT LAB THAT EVERY CB'er NEEDS!

Here's a money saving, time saving, e.c.i. first that measures wattage output, standing wave ratio, percentage modulation and field strength on any CB transceiver, mobile or base.

Look at These Quality-Built Features;

- 10 & 50 WATT SCALES PLUS RELATIVE OUTPUT TO 1,000 WATTS
- MODULATION MONITOR
- CHROME CABINET
- MEASURES MOBILE OR BASE STATION EFFICIENCY

FLEET COURIER COMMERCIAL CB TRANSCEIVER



List . . . $159.50

AVAILABLE NOW . . . WITH NEW, PLUS PERFORMANCE FEATURES!

We're off the drawing boards and into production on this new commercial transceiver. Perfect for transportation, trucking, taxi, marine and agriculture. It's a sleek, new design with built-in top performance.

Here Are Some Features;

- EXCEPTIONALLY COMPACT, RUGGED
- 5 CHANNEL TRANSMIT & RECEIVE
- ALL CHROME CABINET
- SIMPLE, EASY OPERATION
- 18 WATT CONSTRUCTION

Write for Full Details. Dealer and Distributor Inquiries Invited!

e.c.i. electronics communications, inc. 325 no. macquesten pkwy. mt. vernon, n.y.

Turn to Card Insert—Page 12—Now!

Selective Call Designs

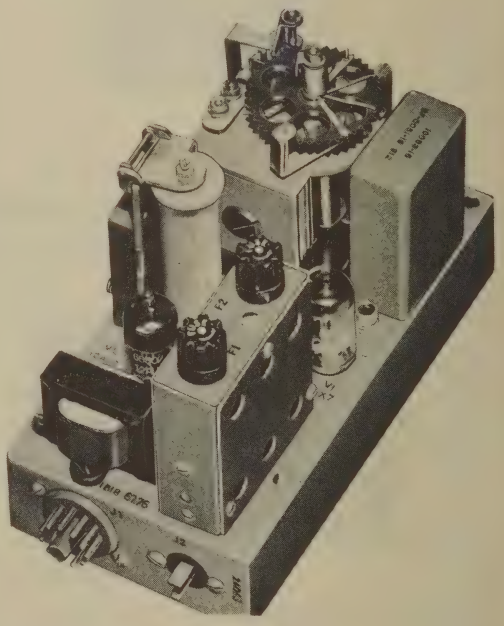
John S. Hill, II—KGI0275
V. P., In Charge of Engineering
Metrotek Electronics, Inc.
Raleigh, North Carolina

Editor's Note:
Author Hill is well known in commercial two-way radio circles for his extensive design work with land-mobile communications equipment. As the design engineer for the Metrotek Monocall selective call device, he knows well of what he speaks here.

Since the beginning of two-way radio the desire for some form of selective calling has been present. Any two-way radio system is basically a gigantic party line which at times may have several hundred users sharing the same radio channel.

The well developed selective dialing systems used throughout the world by telephone companies have serious limitations when an attempt is made to use them in two-way radio. First, "on-the-air" time is valuable and the 8 to 30 seconds required to dial a normal telephone is prohibitive on a heavily used channel. Second, try dialing a telephone in a car in heavy traffic; it is dangerous, to say the least. Third, the telephone dial is a wonderfully simple encoder, but pulse decoders are expensive and tricky. Regardless of these problems some use is and has been made of standard telephone dial system selective calling in two-way radio, primarily by the Bell Telephone System. At least one firm, Secode, also manufactures equipment for commercial use. Representative prices are $125 for an installed encoder (dial) and $175 additional for the decoder to give a full two-way dial system. Both transistor and vacuum tube models are available. Installation is relatively simple in commercial two-way equipment but performance in CB equipment is poor due to the similarity of dial pulses and ignition noise.

The major advantage of dial systems is the enormous code capability and falsing protection. Decoders in current use permit over one million exclusive codes. Most decoders used are electromechanical devices with the code combination readily changed by moving the location of small metal pins. A completely transistorized decoder, actually a small computer, is also available through ITTKellogg but the price is quite high, approximately $300.



Complex Secode Decoder Unit

By far the most useful and widely used commercial selective call system is the CTCSS or continuous-tone low-

frequency squelch system. In this system a very stable tone between approximately 50 and 170 cps is transmitted at low level whenever the transmitter is keyed. The tone level is usually about 1/7 to 1/10 of normal voice level. The receiver squelch is controlled by the presence of the tone rather than signal strength alone and will respond only to that particular tone frequency used in the system. Since the tone frequency is below the frequencies useful in speech transmission it is possible to filter out the tone from the speaker so that the operator is not aware of its presence. The major problems with this system are its complexity and thus its cost, and the limited number of tone codes available. Due to many reasons only about 30 tones may be used on any given radio channel.

Typical trade names are Motorola "Private Line" and General Electric "Channel Guard." Virtually all manufacturers of commercial two-way radio equipment offer this system at prices from $100 to $200 for each encoder-decoder in addition to the radio equipment. CTCSS selective call has one major advantage, the operator does not have to dial or switch anything; operation is completely automatic. In many applications a serious problem is the fact that interference automatically disables the receiver resulting in operator confusion on a busy channel since he does not hear the interference. Today resonant reed oscillator controls and resonant reed relays are used almost exclusively as the tone generators and decoders. Some manufacturers formerly used elaborate electrical circuits to perform these functions but stability problems have led to universal use of resonant reeds. Use of the CTCSS system in CB radio is not likely due to the limited number of tone channels, cost and technical requirements. Extensive modification would be required to add the tone notch filter, eliminate noise limiter distortion and reduce total transmitter and receiver distortion to a few percent. This last problem is severe since any inter-modulation distortion will produce annoying tone harmonics in the voice frequency range which cannot be filtered. 60, 120 and 115 Cycle hum from power supplies will also unlock many tone channels.

One of the simplest and oldest selective call systems is the single frequency tone-burst system. Virtually all major commercial two-way radio manufacturers have or still do offer this accessory and several CB manufacturers, notably Heath, Johnson and Miratel, currently offer it as an accessory. In addition, two manufacturers—Radson, and recently Polytronics—offer it as a built-in accessory.

SR-23 From Polytronics Features Selective Calling

This system has little use today in commercial systems due to the problems of false triggering or long tone bursts and in most cases the necessity of some additional operator action to initiate a call. Even in commercial FM systems heterodyne squeals are not uncommon and in CB radio during skip conditions they are the rule rather than the exception. A single tone system can only distinguish between this interference and its tone frequency by making the tone selectivity high and increasing the time the tone must be present at the right frequency to trigger or unlock. An improvement in tone selectivity requires a resulting increase in the frequency accuracy and stability of the tone generator, which means additional cost. An increase in signaling time means more on-the-air time to call, and if it exceeds approximately 2 seconds, an automatic timing circuit is required since few operators will correctly time manually over 1 second. Voice frequency (200-3000 cps) tones are commonly used to avoid the extensive modifications of other systems.

The advantages of the single frequency tone-burst system are many: Relatively low cost, ease of installation, fair code capability and simplicity. In

Turn to Card Insert—Page 12—Now!

the absence of interference they do an excellent job. Over 200 codes are practical in the 200-3000 cps range. Little commercial use of this system is likely, but due to their low cost, widespread CB use is anticipated. Commercial grade units cost approximately $40 plus installation for an encoder and $60 plus installation for a decoder. CB units which may also be used commercially are usually both encoders and decoders and range from $34 in kit form to $60 plus installation wired. In at least one case (Heath) up to four tones may be front panel selected.

Most single-frequency tone-burst systems today use resonant reed devices for both tone generation and decoding due to their high stability and selectivity. Band width of .1% can be readily obtained in commercial grade units and no tuning is required. A factor to consider is the high replacement cost of resonant reed devices. If your tone frequency must be changed, each reed assembly will cost $8 to $25 in small quantities depending on the type.

Conventional coil-capacitor tuned-circuits have also been used and offer the advantage of relatively inexpensive frequency change. Selectivity is limited by practical consideration to about 1% and temperature drift is a severe problem unless very expensive components are used.

Multiple-frequency tone-burst systems appear to be the most practical solutions where freedom from falsing and high code capability are desired. Two possible systems are available: Sequential and simultaneous tone code transmission. For the *sequential system,* it can be shown that 12 different tone frequencies used in groups of 4 in a 4 tone sequential system would give 11,286 combinations or separate codes.

Similarly in a simultaneous tone system the number of exclusive codes, if groups of 4 in a 4 tone simultaneous system were used, would give 445 combinations or exclusive codes.

Since over 200 separate tone frequencies are possible in the voice frequency range either the sequential or simultaneous tone group systems are capable of a number of exclusive codes far be-

Continued—Page 36

WIN THIS BIG PRIZE

1st PRIZE **A complete Browning Base Station (R-2700-A and 23/S-NINE) plus a new Browning mobile unit, Model M-523.**

Send in your suggestion for a name for the new Browning all-channel mobile CB unit. It's easy . . . it's fun. Here's all you have to do:

Fill out the contest entry blank and submit a name that you think would best fit the new Browning mobile unit. Entries will be judged on the basis of originality by officials of Browning and by its advertising agency. In case of duplication, the entry bearing the earliest postmark will be judged eligible for consideration. Send in your contest entry blank or facsimile today! Hurry, contest closes midnight, November 17, 1962. Contest winner will be announced in the January issue of this magazine.

Browning Laboratories, Inc., Dept. H 100 Union Ave., Laconia, N.H.

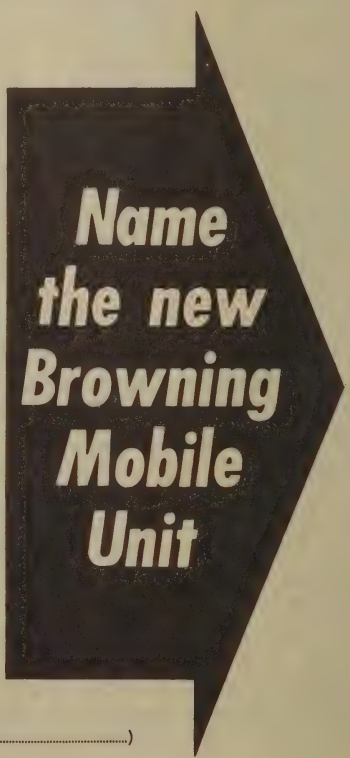
NAME _____

ADDRESS _____

CITY _____ STATE _____

CALL LETTERS _____

My name for the new Browning mobile unit is (.....)



(MODEL M-523 ACTUAL SIZE)

NEW POWER... NEW VERSATILITY... NEW FEATURES

Browning Brings You The Finest Mobile CB Unit With All-Channel Operation

Here's the mobile unit you've been waiting for! Operate on any of 23 CB channels at the flick of a switch with this new Model M-523 mobile unit that features famous Browning base station performance and quality. Contact your local authorized service center or write to Browning for information.

OVERALL FEATURES

- Small size (8" x 3" x 9" deep) makes for easy mounting and more knee room.
- Rear lighted channel indicator.
- Transmit and receive channel selected simultaneously with flick of channel selector switch.
- Modern styling matches interior of all cars and boats.
- Transistorized DC power supply providing high efficiency and reduced maintenance can be mounted in any location.

TRANSMITTER SPECIFICATIONS

- Plate power input 5 watts.
- Power output to antenna 3.5 watts.
- Modulation — 100%, peak limited, plate modulation.
- Harmonic suppression better than 50 db down through use of TVI Trap.
- Frequency stability: .005% per FCC specifications.

RECEIVER SPECIFICATIONS

- Sensitivity 0.4 UV for 10 db signal to noise ratio.
- Selectivity 5 KC @ 6 db adjacent channel 60 db down.
- Frequency stability: .005%.

Send for new 16-page Browning CB catalog. For free copy, write Dept. H 100 Union Ave., Laconia, N.H.

browning

Turn to Card Insert—Page 12—Now! Page 21

4 SELECTIVE CALL UNITS

Throughout this report on selective calling there has been reference to four commercially available tone operated squelch units, comprising either encoder/decoders or encoders alone.

Let's review briefly what these units do. The encoder/decoder combination unit functions on both transmit and receive. On transmit it modulates your transmitter's carrier with a tone or combination of tones at a specified frequency. It is the precise frequency and timing of these tones which comprise the "code" which in turn operates a decoder equipped receiver. On receive, the encoder/decoder "decodes" the tone or tones and senses whether the tone or tones are of the proper frequency and duration. If the code is the correct one, the decoder portion of the unit trips a relay which in turn makes your receiver operative.

An encoder unit, on the other hand, works on the transmitting function alone. It adds the coded tone signal to your transmitted signal, just as the encoder/decoder unit does. But it is out of the circuit on receive. In other words, the encoder alone is used where you need a coded call but not a coded receive. It is designed primarily for mobile transmitter applications where the mobile unit wishes to attract the attention of the base station, which is equipped with an encoder/decoder.

With all of this in mind, CB Horizons solicited the aid of the four manufacturers currently producing such equipment. They are The Heath Company, E. F. Johnson Company, Miratel Electronics and Metrotek Electronics. Lakeshore Industries of Manitowoc, Wisconsin has announced such a system, but it is not yet available for test or sale.

Each of the firms was asked to allow CB Horizons to put a pair of their units through their paces. Each was told we would report on our findings in this special issue.

E. F. JOHNSON TONE ALERT

The E. F. Johnson Tone Alert employs a single tone of a specific frequency to do its signaling. Approximately 37 different tones are available, indicating that up to 37 different systems could operate on the same CB channel in a given area without getting into each other's selective calling hair!

The Tone Alert lists for $59.95, and is designed to plug directly into the rear of the brand new Messenger Two 10 channel transceivers from Johnson. It may be adapted to virtually any CB transceiver now in use, however, and the company provides the necessary instructions.

As the photo shows the unit in use at Horizons, the Tone Alert mounts directly on the side of the Messenger Two. Johnson advises that the unit will also be available for horizontal mounting under the transceiver, with a special faceplate on the Tone Alert for horizontal mounting.

The unit operates as follows. The signal unit encoder/decoder has a three position switch. In the up or top position, your unit remains on **standby** alert ready to receive any calls which may come in, properly coded by a similarly equipped unit. When a call does come in, you hear an audio tone alerting you that you are being called. A pot control on the back of the Tone Alert allows you to adjust the volume of the

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ONLY

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- Professional Quality Truly Portable 2-Way Radio With a 5-Mile Range
- Crystal-Controlled Transmit and Receive Channels
- Superhet Receiver with RF Stage, 2 IF's, Squelch, AVC, Noise Limiter, Push-Pull Audio Output

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83 YX 803DN. KG-4000 Walkie-Talkie Kit. Only..... **$59.95**

83 Y 012. "C" Batteries for above (8 required), each... **14c**

83 Y 011. Rechargeable Battery/Charger/AC Power Supply Kit. Replaces the 8 "C" cells; may be recharged many times; charger unit permits the KG-4000 to be operated from 115 VAC while charging battery. Shpg. wt., 1 lb. Only..... **$19.95**

83 Y 047. Adapter for 12-v. use. Plugs into cigarette lighter of auto. Complete with cable. Only..... **$ 1.00**

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  - ☐ Adapter for 12-v. use 83 Y 047
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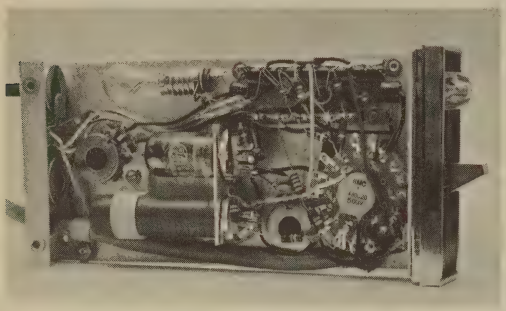
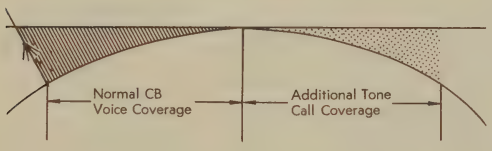
tone. The light on the top of the unit also lights up (red) notifying you that you have been called. The light stays on until you answer the call or move to the middle position which is marked "Operate." Once you have been called, and alerted, you switch down to the operate position and carry on as you would normally with the push-to-talk Messenger, or whatever transceiver you are using.



Inside Tone Alert

If you wish to call another station in your system, one equipped with Tone Alert, you push the three position lever down into the "Call" position. This modulates your transmitter (turning it on, of course) with your pre-set tone code. When you take your finger from the switch a spring release returns the switch to normal or operate position, a safeguard Johnson has built in so that you can't leave the switch down and the transmitter on, accidentally.

In test on Channel 4 (purposely picked for lack of activity in Oklahoma City) we found that we could copy the tone call over distances as much as 50 percent greater than we could copy or understand a voice transmission from



Tone call coverage can be as much as 50% greater than normal CB coverage.

the same station. In other words, it takes less signal to operate a tone-coded squelch system than it does to make audio intelligence out of the same signal.

Cross checking between this unit and others provided by the other three manufacturers in this test program indicated that was no likelihood of falsing or incorrect operation, even with the units of different systems operating on the same channel, as long as they were not using similar tones.

Normal operation of the transceiver, i.e. without the Tone Alert system operative, is accomplished by simply leaving the unit in the middle or operate position.

The Johnson unit employs a vibrant reed for tone generation and the circuit includes a single tube.

METROTEK MONOCALL

The Metrotek Monocall selective calling unit is designed to operate with any CB transceiver, other than those all transistorized versions. An octal socket already provided on the back of the Metrotek transceiver mates with an octal plug on the end of the Monocall attachment cord for 10 second hook-up with the Metrotek transceiver. Price of the Monocall encoder/decoder is $59.95. An encoder only version is also available for $29.95.

The Monocall uses two tones which are spaced apart by a precise amount of time, in addition to their specific frequency and duration. This provides an added measure of safety against false triggering over single tone units. Monocall uses no tubes or transistors, but rather gets its functions from computer type circuitry.

With the Monocall attached to your transceiver, you control the volume of both the tone burst and your transceiver by opening the volume control on the transceiver to full and then using the volume control on the Monocall.

Like the Johnson unit, the Monocall has a three position switch on the front panel. In the up position the transceiver is in quiet or tone-call operation. When a signal from an encoder equipped station is received by the unit, it **senses** it to determine if the signal has the proper code. A properly coded signal switches the transceiver from mute to normal receive for a period (adjustable) up to ten seconds. A light on the

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GAIN A beam antenna consolidates your signal into a single direction. It actually pulls your power into a tight wedge, packed with power!

RANGE A beam gets its gain by concentrating the transmitter energy into a narrow path. This extends your range over a standard ground plane by as much as 150 percent, in the desired direction. And it works on both transmit and receive, actually filtering out unwanted stations on receive by rejecting their signals.

OPERATION For base to base communications over long or difficult paths, you can't beat a beam antenna. For base to mobile communications, a beam at the base will eliminate or greatly reduce dead spots in your coverage area. When ground planes fail to satisfy your CB range needs, a beam antenna is the answer!

AND . . Cesco manufactures the finest, most economical and durable 27 megacycle beam antennas! CESCO beams are precision tuned and system engineered for extended ground wave communications. They're the quickest and easiest to install of all beam antennas on the market!

Factory pre-tuned beam antenna has exclusive Acromatch for increased power output. Extruded aluminum tubing with 1¼" boom; elements have ½" dia. center sections, ⅜" dia. inserts. Elements mount either horizontally or vertically. Resonated at 27.085 mc; low SWR. Assembles in minutes with permanently secured locking rings. Lightweight; will rotate with any TV rotator. Shipping carton only 86" long.

NOTE: Gain Figures cited are in accord with U.S. Bureau of Standards.

3 ELEMENT BEAM	7 db power gain. Complete and ready to install. Wt. only 6½ lbs.	CB Net **29.95**
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Turn to Card Insert—Page 12—Now!

front panel also comes on notifying you that you have been called.

Noting (by tone and light) that you have been called, the switch is pushed into the middle or normal position. From here you carry on normally using the push-to-talk feature of your transceiver.

If you wish to initiate a call with your Monocall, to a Monocall encoder/decoder equipped unit, the three position switch is held down for a brief instant. This triggers the transmitter and modulates the carrier with the multiple burst coded tone. When the finger pressure is removed from the down position of the switch, it automatically returns to the normal or center position.

Each Monocall unit has 6 codes which can be changed quickly in the field, should you decide to switch codes. Approximately 70 tone codes are available as there are 12 basic tone-code circuits available from the factory, each with six codes.

The tones are generated with mechanical reeds. The unit measures 2-13/16 inches high, 3-5/16 inches wide and 5-1/4 inches deep. A terminal strip on the rear of the unit allows the user to reach a single pole double throw set of relay contacts for connecting an external alarm such as an auto horn or door bell in the home.

Field tests on the Monocall indicate that it too, like the Johnson Tone Alert, is capable of activating a Monocall equipped squelch unit over distances approximately 50 percent further than normal voice communications can be carried on.

MIRATEL MODEL 100 SELECTO CODER-DECODER

The Miratel unit is actually a device that Miratel Electronics, 1st Street SE and Richardson, New Brighton 12, Minnesota acquired when the firm bought out the Morrow Radio Company line approximately 1 year ago. The circuit and unit remains unchanged from the unit originally developed by Ray Morrow more than three years ago. At the time it was developed, it was just about three years premature.

The unit is available as a decoder or as a coder, or both together. Both units use 2N408 transistors throughout, with 5 transistors in the decoder unit. Frequency control of the tone is controlled by an LC network. A three position switch on the decoder/encoder acts in the normal selective call method; One position is for normal operation, another for tone-alert calling and the third for selective receiving. Nine coder/decoder frequencies are available. The limited number of frequencies available is apparently due to the LC network used in the circuit, and the limited amount of audio selectivity available in the decoder (80-100 CPS wide) where the tone must be separated from the other signals on the channel **if** the decoder is to decode and alert the user!

The coder is powered by a 9 volt battery, which should last for several years because the transistors employed do not draw more than nominal current. The decoder operates from a 12vac source which is rectified to DC in the unit itself.

While the Miratel (Morrow) unit was designed to operate with the old Morrow transceiver, it is adaptable to nearly any transceiver unit with 12 vac available. Many units employ 12 vac in the filament line of the transceiver.

Price of the decoder is $59.95; price of the encoder is $29.95.

HEATH MODEL GD 162 TONE SQUELCH

The Heath model GD-162 tone squelch unit is the only kit version selective calling unit currently on the market. It employs two tubes and a resonant reed relay circuit. Unlike the other units presently available, the Heath unit gives the user a manual front panel choice of four codes (A,B,C or D) at the throw of a switch. This makes the unit versatile enough that one base station can individually call up to four separate mobiles (or other units) without attracting the attention of the other three.

The GD-162 disables the speaker from your transceiver running the audio output from your transceiver through its own circuitry on receive. When a coded tone signal is received by your transceiver, it it routed through the GD-162 where the circuitry of the unit samples the signal and detects the audio code in the resonant reed circuit. If the signal is of the proper frequency,

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- Crystal-Controlled 23 channel RECEIVE
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- NO EXTRAS—Every crystal, push-to-talk microphone, cables and mobile mounting bracket included in **ONE LOW PRICE**
- ±3 KC Receiver Vernier Tuning Control (No effect on transmitted frequencies)
- Dual Power Supply—Mobile or Base Station—12V DC—117V AC

Hammarlund's CB-23 really goes all the way. It provides you with crystal controlled stability on 23 channels—receive or transmit—with the added facility offered by the ±3KC Receiver Vernier Tuning Control. This amazing transceiver has every feature you have ever wanted in a citizen band unit. Peak "Talk-Power," dual conversion super-heterodyne receiver, noise limiter, adjustable squelch, and built-in S-meter to indicate relative rf transmitter output plus strength of the received signal—built-in . . . at no extra cost.

The CB-23 is ready to go—Just add an Antenna and you're "On the Air"

Best of all—it's a Hammarlund designed and manufactured unit—you KNOW—you take no chance on quality.

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the GD-162 throws a relay (connected to the reed) and connects up your speaker again on the transceiver. This all takes place in the coded receive position. On transmit the GD-162 modulates your transmitter signal with a tone, like other tone calling units.

On receive the tone call actuates the resonant reed relay for several seconds (adjustable delay to 10 seconds) allowing you to listen for the call coming in. A light on the front panel of the unit also goes on, and you have immediate access to a terminal strip on the rear of the unit to which you can connect a buzzer, bell, etc. for alarm alerting to a call.

Inside GD-162

The front panel of the GD-162, as shown in operation in the CBH lab, has these functions. The two position switch in the center is spring loaded. Normally it is up, for receive. Pushing it down turns on your transceiver and modulates your carrier with a tone coded call. Which tone call it modulates with is determined by which position (A,B,C or D) you have chosen on the front panel switch left of center. In position A, your send and receive is controlled by the tone frequency connected to that position on the four position tone select switch. Position B is yet another tone, and so on. Far counter clockwise on the four position tone select switch is a normal operate position which disables the Tone Squelch unit and returns your transceiver to normal non-tone code operation. The switch at the bottom left of the unit turns it on and off.

The GD-162 is available for AC or DC operation, base or mobile respectively. The AC version is model GD-162A, the DC version being GD-162D. Price on the AC kit is $33.95, the DC model costing $37.95.

The unit is supplied with instructions for wiring into most push-to-talk microphone transceivers.

As Horizons obtained the GD-162 units in the same kit version readers would be likely to purchase, the time element in wiring the unit is of interest. Our two units were wired by two Horizons staff members; one unit by our lab engineer, Russ Miller. Miller, who works with circuits day in and day out, required five hours to have his performing. A second builder required nine hours to assemble his, though this was his first electronics kit work ever attempted.

Volume controls on the rear of the GD-162 allow the user to compensate for variations in audio level from both the transmitter and receiver connections. This makes the unit particularly adaptable to a wide range of transceiver types.

GENERAL COMMENTS

It appears likely that with the limited number of tone groups available in the audio range (approximately 200 cycles to 4,000 cycles in this instance) that when the airwaves become saturated with various forms of selective calling devices (and we can be sure that six months from now the original four units described here will have been joined by a half dozen more) there will be false triggering between units of **different** systems. This will be especially true with the single tone units. However these inter-action problems should be easily cured by one system selecting to use another code frequency, much in the same way two users of **one** type of selective calling system mutually agree to use different calling tone frequencies when operating on the same CB channel.

In the short and long runs, the choice to go to selective tone calling should greatly increase the efficiency and effectiveness of CB radio systems.

10-7

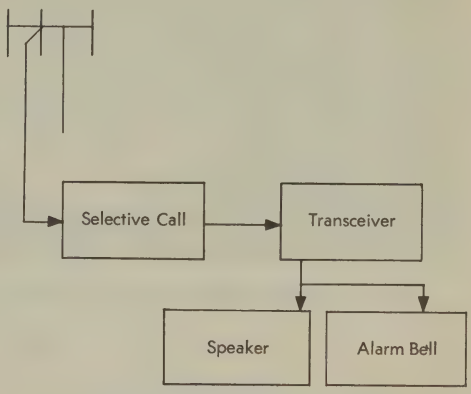
Basics—Continued

all of these very same signals . . . all still on channel. The receiver stays completely quiet, *until,* its squelch is activated by a special electronic impulse. That electronic impulse comes from another selective call unit. And because the electronic impulse is coded, only your unit responds to it. To put

it another way, even if another CB communications system using your very same channel is also using a selective calling system, they will not trigger your units' squelch unless by some odd-chance both systems are using the exact same impulse combination. And even if this should happen, the problem is quickly remedied by changing a wire or two in your selective tone caller and thereby converting to another code combination.

HOW IT DOES IT

A selective call attachment performs two functions. On transmit, it sends out a specially coded electronic impulse signal. That electronic impulse sounds (to the ear, listening to the signal being transmitted by a selective calling station) a variety of different ways, depending upon which system you are using. The Monocall system from Metrotek, for example, transmits two high-pitched electronic notes. These notes are so close together as to sound like a single note. But to your specially equipped Monocall receiving-transceiver, they are electronically distinguished as two separate tone signals separated by a specified length of time. The E. F. Johnson Tone Alert and the Heath signaling unit, on the other hand, transmit a single tone of a specified pitch and duration. This tone is sensed by a special receiving selective call attachment which operates a relay and turns your receiver from squelch to "on" position (see diagram 3).



The selective calling system then has two important ingredients. Both may

Continued—Page 45

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Proudly Announces the
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TRAM 23 — $320.00
Complete with crystals for 23 channel transmit and Turner Mic 254X.

The finest 23 channel transmitter and tunable receiver combination available anywhere.

The transmitter features built-in, keyed compression limiting that provides the highest average modulation obtainable, without splatter. Careful design and optimized circuit values result in efficiency you must see to believe — (3.5 watts minimum RF output)

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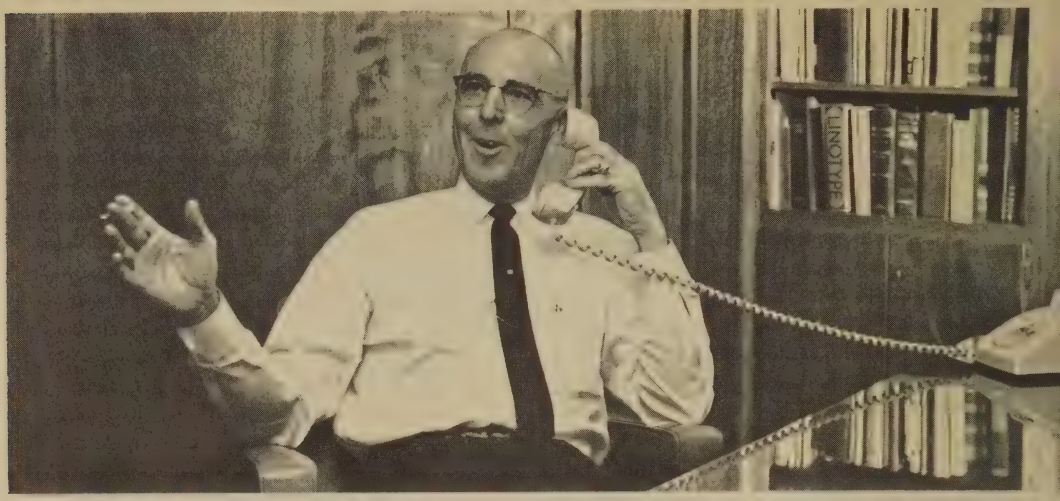


The Most Advanced Selective Calling Device Ever Designed!

Sure—selective calling is for you . . . and all other serious users of CB radio who demand the very finest in reliable, private two-way communications. Selective Calling via the Metrotek Monocall is an entirely new, advanced concept in privacy communications. No troublesome tubes or transistors. Multiple tone, fail-proof circuits. Years ahead computer type circuitry outmoding even the newest audio-tone calling units recently announced! Selective Calling is here today—and it satisfies today's CB communications needs. Make your CB two-way system truly quiet and private. Switch to Monocall today!

The Monocall Encoder/Decoder from Metrotek is the most advanced selective calling device ever designed—at any price! No tubes or transistors; no unnecessary heat generation. The Monocall decoder function unlocks the receiver for 10 seconds (adjustable delays of shorter or longer duration possible by simple change), automatically resetting. Single switch operation for (a) selective receive, (b) normal receive, and, (c) selective call. Telephone type switch for rugged, reliable, long life operation. Dust protected relay has minimum life expectancy of 100 million operations.

Monocall Encoder/Decoder units are designed to be easily set to any one of six different codes. 12 basic units mean up to 72 different code combinations possible! No additional power needed. Monocalls derive their modest power requirements (power drain less than 1/1000th of a watt on receive positions) from the B+ of the transceiver. Monocall may be installed directly on **any** CB transceiver with 120 vdc available. 12 vdc version will be available shortly. Mechanical reeds built for rugged lifetime operation. Small, compact, supplied with mobile mounting brackets. Terminal strip on rear of unit for quick connection to external alarm such as auto horn or door bell.

Metrostar Plus Monocall—The Years Ahead Citizens Band Communication System

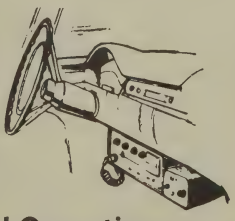
Metrostar plus Monocall—that's the CB communications system of the future! Think of it. All of the years-ahead advantages of selective calling via Monocall, **plus,** 8 channel fixed tune-receive crystal control and 23 channel tunable receive with the brand new Metrostar transceiver. The Metrostar transceiver features ruggedized transmitter design (**12 watt construction**), maximum usable receiver sensitivity (**0.1 uV**) and selectivity, laboratory frequency stability, range-compensating noise limiter (**years ahead design!**), positive action squelch and dual action power supply (**12 vdc or 115 vac**). PLUS—all of the extra features you expect only in $200 transceivers. "S" and "RF" meter, pi-network loading controls, "voltage-on" indicator, modulation indicator, plug in high quality EV 714SR microphone, positive lock two point mounting for mobile.

AND—Every Metrostar transceiver is equipped for plug-in attachment of the fabulous Monocall selective call system! Just plug it in—less than ten seconds to go selective call.

Design Your Own System

Start with one or more Metrostar advanced design transceivers. Add your Monocall Encoder/Decoders or Encoders as you need them!

The Perfect Combination for Both Base Station and Mobile Citizens Band Operation—Metrostar plus Monocall!



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CITIZENS BAND DATEBOOK

A SERIES OF IN DEPTH REPORTS ON CB'ERS ACTIVITIES FROM COAST TO COAST.

JOINT HAM-CB EFFORT

Editor's Note: A CB'er has a microphone, a transmitter-receiver and an antenna. The ham? He has a microphone too. He may also have a telegraph key. He has his transmitter . . . and a receiver. Lastly he has his antenna.

How do the two differ? Technically, in power limitations (5 watts for CB, 1,000 for amateur), antenna limitations, and operating frequency limitations.

Morally, the two differ even more. One (the CB'er) is exceedingly limited by FCC regulations as to what he can and cannot do. The ham has very few such limitations.

The two are *not* comparable, except when the chips are down. They were down . . . and down good on the 18th of May of this year.

In this most unusual and exciting story, R. H. Miller (CB'er 6Q3954, amateur WA4ECJ) tells how the two joined forces believing that their joint efforts might save a life. To this day the outcome of this story is unknown. It does serve as an example, however, for CB'ers and amateurs alike, and illustrates the extent of cooperation that can and must exist, when the need arises.

Writer Miller is the Radio Communications Officer for the Beaufort County (South Carolina) Civil Defense Organization.

At one-thirty PM on the afternoon of May 18th, a monitor station of the Sea Island CB'ers Club called Beaufort County Civil Defense Headquarters on channel 9, and set in motion a chain of events unique in the annals of radio communication. The story is one whose beginning is shrouded in mystery, and the outcome of which has not yet been determined. Nevertheless, the activities that took place, the cooperation displayed, and the services rendered, are of interest to both CB'er and ham, for it was an occasion when both worked together with a single purpose.

The skip was heavy that day. Since mid-morning, signals from the western States had been pounding in on the eastern seaboard, rendering local traffic difficult. As we all know, *it just ain't* legal to work that far—under ordinary conditions. But when a Texan with urgent priority traffic eastward was heard calling for assistance, one of our boys responded.

It seems that a GI, presumably traveling under official orders, was enroute from New Mexico to Jacksonville, Florida. After his departure from home, it was discovered that his six-week-old daughter had contracted spinal meningitis. This man must be intercepted and advised. His name was given, as was a description of the car he was driving. It was known that the car had Florida license plates, and—most important of all—that he was equipped with CB radio. His call letters and operating channels were also ascertained.

Several aspects of the situation immediately presented themselves. Of primary concern, of course, was the humanitarian motive of advising the traveler of his daughter's illness. His commanding officer could probably arrange rapid transportation. There existed the further possibility that he himself might have been exposed to that dread disease, with the danger of spreading it to others. Public safety was definitely involved.

Continued—Page 52

CANADIAN GRS NEWS

Unlike the present licensing structure in the United States, Canadian users of the General Radio Service may apply in person for their licenses at any one of a number of regional Department of Transport offices (*Note*: These offices are listed with this report). The individual offices do the actual licensing and keep all of the records on the grants. Each regional and field office is assigned call designations from which they assign individual call letters.

The map with this report shows the general breakdown of XM call sign prefixes, from XM1 through XM6. You will note however that all GRS signs have the XM nomenclature, plus 2 numbers . . . plus 3 more numbers. Here is what it means. XM stands for GRS, Canada, through International agreement. The next two numbers (take the 44 in my call sign) tells you what part of the country I am in. For example, all "44" stations are licensed from the London, Ontario field office of DOT. Finally, "168" are my own serial numbers, similar I might note to the same call sign sequence in use in Venezuela, and as explained by CBH South American reporter Pedro Seidemann.

Regional and Field Office Call Sign Designators for General Radio Service

XM11—Vancouver, British Columbia	(Regional)
XM12—Vancouver	(Field)
XM13—Victoria	(Field)
XM14—Prince Rupert	(Field)
XM15—Kelowna	(Field)
XM21—Edmonton, Alberta	(Regional)
XM22—Edmonton	(Field)
XM23—Calgary	(Field)
XM24—Grande Prairie	(Field)
XM31—Winnipeg	(Regional)
XM32—Winnipeg	(Field)
XM33—Regina	(Field)
XM34—Saskatoon	(Field)
XM35—Brandon	(Field)
XM36—Port Arthur	(Field)
XM41—Toronto, Ontario	(Regional)
XM42—Toronto	(Field)
XM43—Hamilton	(Field)

(Continued Page 35)

FCC CLEARS TONES

In response to a query from Publisher Bob Cooper, Jr., Acting Secretary Ben F. Waple of the Federal Communications Commission attempted to clarify once and for all the question of what is and is not legal, with selective tone calling devices, in the Class D Citizens Band.

Waple, in replying on September 13, wrote "Section 19.34 (d) permits Class D stations to use tone signals or signalling devices whose sole function is to establish and maintain voice communications between stations. It was contemplated under this rule that the receiver of the station unit to which a tone signal is transmitted would be equipped with circuitry which was responsive only to that particular audio frequency, and when the proper tone was received, would turn on the speaker so that the voice call could be heard. When used under such circumstances, these devices can play a useful role in bringing about more efficient communications with Class D Citizens Band stations.

"It may also be noted that tones may not be transmitted by Class D stations for the control of remote objects or devices.

"From limited information on hand, a few makes of attachments advertised for selective calling use with Class D station units appear to be capable of performing their proper function, as described above, if properly installed and used. Units to be installed by non-technical persons should not be capable of causing modulation in excess of 100 percent. Otherwise, Section 19.71, in effect, requires that the installation must be made by, or under the supervision of a person holding a commercial second or first class radio operator license.

"It is not anticipated that future (pending) rule changes will reflect significant departures from this basic approach to the use of tone call devices in the Citizens Radio Service."

The Editor

A Reader Questions KYLE On Audio Amps

A worthwhile publication is a forum for its readers. Readers, being individuals, are basically different. In other words, different readers will have differing interpretations on identical points.

Our monthly "OZZIE" column is usually the spot we choose to air these differences. However, from time to time a well written "opinion" of considerable length passes through our office. This short article is the result of such an exchange, between Technical Editor Jim Kyle (10W0901) and Paul E. Smay, Chicago, Illinois, the holder of Radiotelephone and Radiotelegraph First Class Licenses issued by the FCC.

Smay wrote "I wish to call your attention to an opinion of mine, which is based on many years of experience with the FCC, both as an amateur (W9TZN) and as a commercial licensee . . ."

"The opinion is this. If the fellow who wrote the article in your April, 1962 issue, which includes the Talk-Power Super Booster beginning on page 10, had read carefully Section 19.71 (d) (4) of the FCC regulations, and associated material in the same section, I don't think he would have ever authorized its being published. It is very obvious that it does not help an un-licensed operator to tell him to build a gadget and install it in his transmitter when it permits him (as you say) to *overmodulate so badly that nobody can read you.* True, you do warn your readers that such operation is illegal. But is that enough? What you do tell them is equally true, that to adjust the modulation on that CB rig, with a control which is capable of causing the rig to overmodulate badly, *must be done by or under the immediate supervision of a person holding a first or second class commercial radio operator's license.*"

In replying, Tech Editor Kyle wrote "Naturally, we disagree with you about the legality of our talk-power booster. Section 19.71 (d) (4) to which you refer says, in essence, that the *transmitting equipment* shall have been so designed that none of the adjustments may reasonably be expected to result in over-modulation (or, several other technical areas *not* pertinent to this discussion). We believe that the devices which we publish construction information for are *accessories* rather than being a part of the transmitting equipment itself. And, if they are not part of the transmitting equipment, then the requirement for adjustment by a licensed operator *is* very much in doubt. Many firms produce and sell speech clippers, compression amplifiers, etc. Most of these have the capability, if improperly adjusted, of producing overmodulation. Would you have them, also, be adjusted by a licensed first or second class operator. And how about changing crystals? Take a look at 19.71 (d) (3)!

Actually, we all hope that the expected revision of Part 19 will make this whole thing a little less foggy."

10-7

GRS—Continued

XM44—London ..... (Field)
XM45—Kitchener ..... (Field)
XM46—S. S. Marie ..... (Field)
XM47—North Bay ..... (Field)
XM48—Kingston ..... (Field)
XM49—Ottawa ..... (Field)
XM51—Montreal, Quebec ..... (Regional)
XM52—Montreal ..... (Field)
XM53—Sherbrooke ..... (Field)
XM54—Port Alfred ..... (Field)
XM55—Quebec ..... (Field)
XM56—Three Rivers ..... (Field)
XM61—Moncton, New Brunswick (Regional)
XM62—Moncton ..... (Field)
XM63—Halifax ..... (Field)
XM64—Sydney ..... (Field)
XM65—St. John ..... (Field)
XM66—St. Johns, Newfoundland ..... (Field)

DIRECTORY OF DOT OFFICES

Following is a listing of Department of Transport Regional Offices where GRS licenses may be obtained. Most GRS offices stock reprints of The Canada Gazette Part II Volume 96 printing of the regulations which spells out the GRS "do's and don'ts".

VANCOUVER (1), B.C.
Regional Director, Air Services, 739 West Hastings St.
PRINCE RUPERT, B.C.
Inspector, Radio Regulations, No. 2, Wallace Block, 305 Fulton St.
VICTORIA, B.C.
Inspector, Radio Regulations, Room 404, Belmont Bldg., 805 Government St.
KELOWNA, B.C.
Inspector, Radio Regulations, 434 Bernard Avenue.
EDMONTON, ALTA.
Regional Director, Air Services, Federal Bldg., 9820-107th St.
GRANDE PRAIRIE, ALTA.
Inspector, Radio Regulations, Room 202, Richmond Bldg., 10118 Richmond Ave.
CALGARY, ALTA.
Inspector, Radio Regulations, 404 Public Bldg.
WINNIPEG, MAN.
Regional Director, Air Services, Room 706, General Post Office Bldg., 266 Graham Ave.
SASKATOON, SASK.
Inspector, Radio Regulations, Room 413, Federal Building.
REGINA, SASK.
Inspector, Radio Regulations, Room 308, Post Office Bldg.
BRANDON, MAN.
Inspector, Radio Regulations, 204 Post Office Bldg., P.O. Box 415.
PORT ARTHUR, ONT.
Inspector, Radio Regulations, 330 Dominion Public Bldg.
TORONTO, ONT.
Regional Director, Air Services, 25 St. Clair Avenue East.
SAULT STE. MARIE, ONT.
Inspector, Radio Regulations, Federal Bldg., Room 302, Queen & East Streets.
NORTH BAY, ONT.
Inspector, Radio Regulations, Room 408, New Federal Bldg., 101 Worthington St. E., P.O. Box 596.
LONDON, ONT.
Inspector, Radio Regulations, Rooms 406-408, Dominion Public Bldg., 450 Richmond St., P.O. Box 413.
KITCHNER, ONT.
Inspector, Radio Regulations, Dominion Public Bldg., 15 Duke St., P.O. Box 216.
HAMILTON, ONT.
Inspector, Radio Regulations, Room 629, Canadian Government Bldg., 150 Main St. West.
KINGSTON, ONT.
Inspector, Radio Regulations, 273 Federal Bldg., P.O. Box 633.
OTTAWA, ONT. (Ottawa area Field Office)
Inspector, Radio Regulations, Room 405, Garland Bldg., 142 Queen Street.
DORVAL, P.Q.
Regional Director, Air Services, Regional Administration Bldg., Montreal International Airport, P.Q.
MONTREAL, P.Q. (Field Office)
Inspector, Radio Regulations, Room 725, 305 Dorchester St. W.
PORT ALFRED, P.Q.
Inspector, Radio Regulations, Federal Bldg., 85 St. Alexis Ave., P.O. Box 430.
QUEBEC, P.Q.
Inspector, Radio Regulations, Public Bldg., 390 Dorchester St., P.O. Box 3148, St. Roch Postal Station.
SHERBROOKE, P.Q.
Inspector, Radio Regulations, Federal Bldg., 315 King St. W., P.O. Box 292.
THREE RIVERS, P.Q.
Inspector, Radio Regulations, Public Bldg., Post Office.
MONCTON, N.B.
Regional Director, Air Services, L'Assumption Bldg., 232-238 St. George St., P.O. Box 42.
SAINT JOHN, N.B.
Inspector, Radio Regulations, Customs House, P.O. Box 1285, Prince William St.
HALIFAX, N.S.
Inspector, Radio Regulations, Dominion Public Bldg., P.O. Box 217.
SYDNEY, N.S.
Inspector, Radio Regulations, 251 Federal Bldg., P.O. Box 281, Dorchester St.
ST. JOHN'S, NFLD.
Inspector, Radio Regulations, Room 632 Sir Humphrey Gilbert Bldg., Duckworth Street, P.O. Box E-5088.

Turn to Card Insert—Page 12—Now!

yond practical use, even when only two tone frequencies are used.

Sequential tone groups are widely used commercially where protection from false triggering is mandatory. Typical uses are turning on rural fire station sirens from a remote point, oil pipeline valve control and missile destruct commands. The sequential system is expensive since in practical systems each tone used must have a continuous oscillator. Encoders range from $150 to over $3000. Decoders are considerably less expensive, approximately $60 to $100 plus installation for commercial units. No units specifically designed for the CB market are known. Resonant reed devices are used almost without exception.

Until recently, few *simultaneous* multiple-frequency tone-burst systems have been used due to the lower number of possible combinations. Recent advances in resonant reed devices have made it possible to generate up to four tones simultaneously at low cost. The extensive work in computers of the last 15 years has produced coincidence circuits which result in decoder action only when a number of the exact tone frequencies are simultaneously present. Such a system is almost immune to falsing since the probability of several tones of exactly the right frequency being simultaneously present is very remote. As few as two tones give excellent protection. An advantage over the sequential system is that audio tones rapidly varying in frequency will not false the decoder. Particularly, in CB radio and high frequency long distance systems, varying heterodyne frequencies are a common occurrence.

One such system, "Monocall", is currently available. Encoders (6 codes) are less than $30 plus installation and a combined encoder-decoder (6 codes) may be purchased for less than $60 plus installation. Patented circuits eliminate the necessity of any vacuum tubes or transistors and resonant reed relays are used. This system appears to be a most practical one for CB use and will probably be widely used commercially also.

Another system under development by many companies is digital pulse code. As a result of advances in computer circuitry and IFF (identification, friend or foe) it appears practical to design completely electronic digital systems.

The advantages are: very high code capability, automatic operation, low power drain, excellent false triggering, short calling time and reliability. The major disadvantages are very high cost, currently $300 to $2000 for an encoder-decoder and large bandwidths in the communications equipment. Pulse width and pulse position modulation are both under investigation. No commercial or CB units are in production although several military systems have recently been announced.

J. H.

Feedback

HE-15 A Receive

A typographical error slipped past us in the article on adding crystal receive features to the HE-15 (September issue, page 10). The error is on page 34, first paragraph. The article **should** read: "The arm of the toggle switch is connected to ground, while the other terminal of the switch is connected to one side of the crystal socket."

Several readers have questioned the method of calculating the proper crystal frequency. Actually, the crystal frequency can be **either** above or below the receive frequency, by the amount of the **if.** McKay chose to use the lower of the two possible frequencies to allow substitution of "stock" crystals in some cases, as mentioned in the article.

Finally, if your **if** amplifiers are not aligned to precisely the marked intermediate frequency, you may find the channel slightly "off-tune". To remedy this, touch up the **if** alignment on the crystal-controlled channel after completion of the modification. Then you will know the **if** is properly tuned up for both modes of operation.

— jk —

GROVE CB SALE ORDER BLANK!!!

COMMAND CB GOLDEN BEAM

3-Element Beam—Com-Gold Treated For Extra Power—Com-Gold Treated To Prevent Rust And Corrosion—Fights Off The Rusty, Salty Coat Of Weather To Deliver Top Performance!

☐ **MODEL GB-3** LIST—$50.00 SALE PRICE $19.95

☐ **UTICA TRANSCEIVERS** (Town & Country) (Reg. $180) SALE PRICE **$119.95**

☐ **JAMES KNIGHTS CB CRYSTALS** (Specify make, model and channel) SALE **$1.99**

☐ **SPEAKEASY** (audio comp. amp.) + **FREE BONUS!** Command channel selector ONLY **$34.75**

☐ **NOISTOP** by Business Radio Co. + **FREE BONUS!** Command channel selector ONLY **$16.95**

☐ **HY-GAIN COLINEAR CLR ANTENNA** + **FREE BONUS!** 100 ft. RG58 foam coax cable ONLY **$29.95**

☐ **"S" MASTER** by Business Radio + **FREE BONUS!** Tuneable GNS generator filter ONLY **$9.95**

☐ **"PATCH-A-CALL"** by Business Radio + **FREE BONUS!** "S" MASTER by Business Radio ONLY **$64.95**

☐ **SIGNAL FILTER** by SECO + **FREE BONUS!** Command channel selector ONLY **$15.88**

☐ **SECO TRANS. "S" METER** (#450) + **FREE BONUS!** 50 ft. RG58 foam coax cable ONLY **$13.88**

☐ **PL-259 COAX CONNECTORS** 39c each 10 for **$3.50**

☐ **SO-239 COAX CONNECTORS** 39c each 10 for **$3.50**

☐ **UG-175 ADAPTORS** 14c each 10 for **$1.19**

GET THAT SIGNAL OUT WITH ULTRA-LO-LOSS FOAM COAX CABLE!!!

☐	50 ft.—RG58u Coax Cable	SALE	$2.49
☐	100 ft.—RG58u Coax Cable	SALE	$3.99
☐	50 ft.—RG8u Coax Cable	SALE	$4.95
☐	100 ft.—RG8u Coax Cable	SALE	$8.99

☐ **POWER-TALK VOICE BOOSTER** Increases Audio Strength 100% by Globe + **FREE BONUS!** 15-Pc. Noise Suppressor Kit ONLY **$24.95**

☐ **M-67 ROOF-TOP ANTENNA** (Antenna Specialists) + **FREE BONUS!** 100 ft. RG58u foam coax cable ONLY **$15.60**

☐ **COMMAND ANTENNA ROTATORS** Complete with 100 ft. 4-Cond. Cable ONLY **$22.99**

☐ **SIGNAL OPTIMIZER** by Globe. Universal CB Tester, 7-in-1 Unit + **FREE BONUS!** Command channel selector ONLY **$47.50**

☐ **M-81 MAGNUM ANTENNA** (Antenna Specialists) + **FREE BONUS!** Command Channel Selector ONLY **$28.43**

☐ **9-TRANSISTOR "WALKIE TALKIES"** Reg. $50 Deluxe units with leather case, xtl controlled SALE 2 for $57.99 **$29.99**

☐ **COMMAND GP-1 GROUND PLANE ANTENNA** solid alum. radials, heavy duty SALE (Reg. $16) **$8.99**

☐ **COMMAND COMET ANTENNA** top-loaded whip + trunk lid mount SALE (Reg. $12) **$7.99**

☐ **COMMAND CORSAIR ANTENNA** bumper mount + spring + 102" whip SALE (Reg. $15) **$8.99**

☐ **COMMAND COURIER ANTENNA—** center-loaded, st. steel, fits stand. Mounts. SALE (Reg. $7) **$4.69**

☐ **COMMAND CB SILENCER KIT** 15-pc. mobile noise suppression kit: contains GNS tuneable generator filter, feed-thrus, spk. plug & dist. suppressors, etc. SALE (Reg. $10) **$4.99**

☐ **COMMAND XS-12 CRYSTAL SELECTOR** —adds 12-position to transmit or receive SALE (Reg. $10) **$5.95**

☐ **COMMAND CORSAIR II ANTENNA** double bumper mount + spring + 102" whip SALE (Reg. $18) **$9.99**

☐ **COMMAND CONTACT II** stainless steel spring & 102" whip + chrome body mount SALE (Reg. $12) **$6.89**

☐ **COMMAND SUPER III BEAM** 3-Element Beam, rugged-mounts vertically or horizontally SALE (Reg. $30) **$11.99**

Closing out our stock of CB kits. Originally advertised at $39.95 up. Complete with power supply, tubes, crystal, cabinet, wire instructions, etc. Less microphone. Note: transmitter must be tuned and tested by or under supervision of person holding a first or second-class FCC license. All sales final at this price. Thousands now in use. Rush your order in today while the supply lasts.

☐ **110 Volt CB Transceiver Kits** **$19.95**

☐ **12 Volt CB Transceiver Kits** **$22.95**

☐ **6 Volt CB Transceiver Kits** **$22.95**

Check items wanted. Return ad or order with check or money order. Include postage, excess refunded. 50c service charge on orders under $5.00. Beams and 102" whips shipped Railway Express. 50% deposit on C.O.D.'s

☐ CB DEALERS: Write for Quantity Prices!

GROVE ELECTRONIC SUPPLY COMPANY
4111 W. Belmont Avenue **Ph. AV 3-6160**
Chicago 41, Illinois

☐ Rush items checked
☐ Send FREE catalog of giant CB Values

Name.....
(please print)

Address.....

City.....Zone....State.....

Turn to Card Insert—Page 12—Now!

SELECTIVE CALL
OPERATING TECHNIQUES

Assume, for a moment, that you have one of the four types of Selective Calling installed in your base or mobile transceiver. With your three position switch on selective receive (i.e. tone call) you want to place a call.

What do you do? Simply throw the switch into tone or code call for the required amount of time, and then stand by?

Not if you want to stay legal, you don't! The FCC is very explicit about your not purposely interfering with the transmissions of another station on the air. If you switch from selective (coded) receive to selective (coded) call, *without listening* first in the "normal-receive" position to see if the channel is clear, *you are in clear violation!*

So when you make the big switch to tone calling and receiving at your station, regardless of which manufacturer's system you adopt, remember — "Switch neutral and listen first. Then . . . *only* when the channel is clear, inaugurate your selective call."

Extensive field tests of selective calling here at CBH has revealed one more very interesting thing. The tone or tones transmitted by the selective call device are capable of tripping the squelch on your selective call adapted receiver over approximately 50 percent greater distance than you can read (understand) the modulation (transmission) from the same station.

What use is this? Well for one thing, if you realize that you have been called or are being called, you will probably pull over off the highway and look for a "hot spot where the signal comes up out of the noise strong enough to establish a contact and carry on a conversation. If nothing else, you will realize that you have been called (for example the *Johnson Tone Alert* has a light which stays lighted until you return the call) and this can be your *signal* to head for a telephone to learn what your base station wants of you.

10-7

See . . . .

Webster band-spanner 440

ALASKA
Karaffa Sound Systems ..... Anchorage
CALIFORNIA
Western Auto ..... Alameda
Darnall Colorprint Service ..... Bellflower
Master Electronics Supply ..... Downey
Sanders CB Radio ..... Fremont
Radio Product Sales ..... Los Angeles
GEORGIA
Snelville Electric ..... Snelville
HAWAII
Hobby Craft ..... Honolulu
ILLINOIS
Citizens Band Specialists ..... Rockford
Larkins Company ..... Broadview
IOWA
TCR Distributors ..... Davenport
LOUISIANA
Brooks Electronic Supply ..... New Iberia
MASSACHUSETTS
Lanman Marine Sales ..... Newton
Welch Electronics ..... Pittsfield
MICHIGAN
Northwest Electronic Supply ..... Detroit
MINNESOTA
Lou Bond Company ..... Minneapolis
MISSOURI
McGee Radio ..... Kansas City
NEW YORK
Western Auto ..... Albion
NORTH CAROLINA
Communications Engineering Company ..... Concord
Mac Victor Electronics ..... Concord
OHIO
Hartford Electronic Supply ..... Bucyrus
RHODE ISLAND
Elmwood Distributors ..... Providence
TENNESSEE
Smith Electronics ..... Knoxville
TEXAS
Southern Radio ..... Dallas
L & M Sales ..... Waco
WEST VIRGINIA
Chemcity Electronic Distributors ..... Charleston
Mountain Electronics ..... Charleston
WISCONSIN
Echo Communications ..... Cedarburg

Webster distributors are being appointed for areas not listed—names on request

BAND-SPANNER *quality products by* Webster

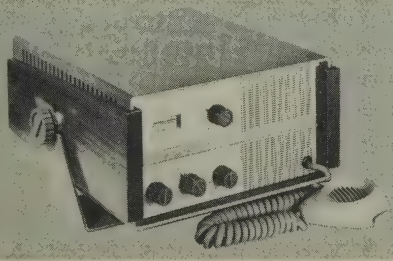
317 Roebling Road, South San Francisco, Calif.

"440" TIME

Now . . . see for yourself, this handsome, high performance product of advanced communications engineering.

"440" 10-channel beauty, is now on the shelves of Band-Spanner distributors across the nation. Check the accompanying listing for the distributor nearest you. 440 is "must" seeing for those who want frequency synthesizing—other advanced features that are fully up to—even beyond—the state of the art.

- *10 crystal controlled channels (transmitter and receiver) plus tunable receiver that covers all channels.*
- *All performance requirements meet-or exceed–FCC and DOT specifications.*



WEBSTER BAND-SPANNER
317 Roebling Road, South San Francisco, Calif.

Please send me free literature describing the "440" Citizens Band radio.

Name_____

Number Street

City Zone State

Turn to Card Insert—Page 12—Now!

UNDERSTANDING TECH TERMS

—STAFF—

When a single reader writes, we have a short answer form letter available to answer most questions.

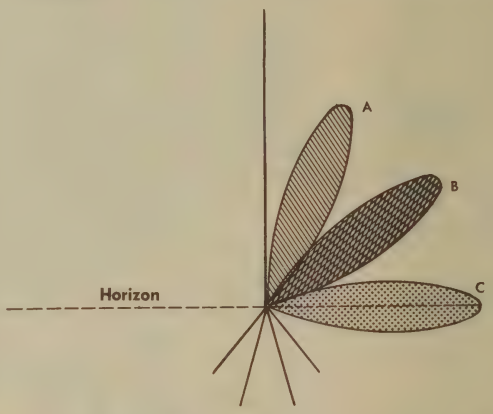
When several readers write asking the same question, we draft a new form letter and give it a number keying the answer by number for future reference.

When a *raft* of letters come in (in this case it was more like a battleship!) asking the same question, we prepare an article to answer that question or questions.

Case-to-point. The August Annual Directory issue of CB Horizons. 80 pages of jam-packed specifications and operating characteristics for nearly 100 CB transceivers, hundreds of accessories and nearly 1,000 antennas. Pages and pages of abbreviated listings depicting the performance curves, prices and availability of every major piece of equipment available to the CB'er today.

More than one CB'er found the subject matter so complex as to be confusing. And no wonder! Even our editors found the subject matter confusing in some cases. The manufacturers who supplied the information from their own files for our Directory used several different methods to measure a simple thing like transmitter output. These same manufacturers used more than a dozen methods of measuring receiver characteristics, i.e. gain, selectivity, etc.

Antenna manufacturers presented even more of a problem. Some measured antenna gain over an imaginary reference antenna. Others measured their gain over a standard reference dipole (½ wave antenna). Still others measured the gain 20 degrees above the horizon, while some measured it at the horizon!



How Do You Measure Antenna Gain? At The Horizon (c), or off in the 'Blue' (A or B)?

When all was said and done, it was *crystal clear* that a *fog* hangs over the entire industry! No one seems ready to standardize on even the most rudimentary measurement techniques.

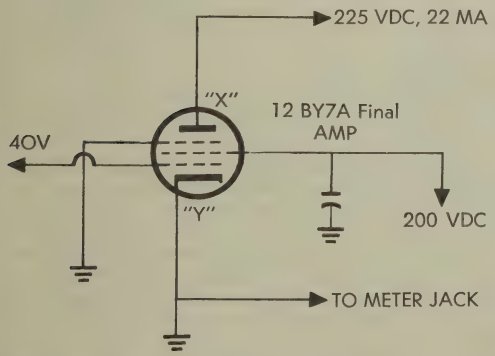
Other industries, even other communication industries, have solved this problem by sending representatives from the various firms involved to sit down around a conference table, and lay their cards on the table. Some manufacturers give a little . . . others take a little. But in the end, all agree to adopt a single set of measurement and evaluation standards. In this way, and only in this way, the ultimate user of the equipment (in our case, the CB'er) knows that a db is a db, 5 watts is 5 watts, and 100 percent modulation is 100 percent modulation.

So where do we go from here? Our August Directory issue of equipment this year was a start. Next year's Direc-

tory will spell out the measurement techniques utilized by each manufacturer and the reader will at least know if the figures given were obtained by a standard method, or a special method suited to a particular manufacturer's particular unit. For, as matters stand now, it is possible to utilize measurement and evaluation techniques which accent certain performance curves of your equipment far beyond the performance curves of *other* identical design sets (with a different brand name).

Let's take an example. Five watts input is the maximum power input permitted to the final amplifier stage of a transmitter operating in the Class D Citizens Band. Determining plate power input should be a simple enough procedure. Every elementary electronics text books tells you that the plate power input of a transmitter is equal (in watts) to the plate voltage applied to the final amplifier times the plate current that final amplifier draws. In other words, a plate voltage of 200 volts times a plate current of 25 milliampheres is 5.0 watts plate power input.

What could be simpler? We have two measurements to make. A DC volt meter measures the plate voltage. And we use a DC current meter to measure the plate current. Figure 2 shows where we would measure this on a typical transmitter, such as the Eico 762.



Do We Measure At "X" and "Y"

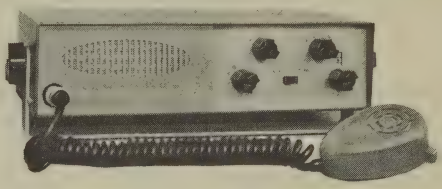
But is it so simple?

By *pure* definition, the plate voltage must be measured as the difference in

Continued—Page 47

Cadre '500'

Compact, lightweight, completely transistorized, the Cadre '500' gives the most . . . gets the most in 2-way radio communications in the 27 Mc band.

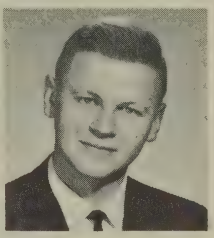


$19.95 Down

only $16.50 per month

For One Year

Now you can own the Cadre '500' . . . and on convenient credit terms if you wish! This 5-watt superheterodyne transceiver combines simple operation with utmost dependability. Remarkably compact—only 6 lbs.; less than 12x4x6 inches. Perfect for both base and mobile. 5 channel transmit & receive plus 23 channel tunable. Automatic noise limiter. Speech clipper built in. Range up to 20 miles —30 miles over water. Housed in handsome gold and brown metal case. Just $199.50.



"Sandy" says—Don't miss this opportunity to own the remarkable Cadre '500'. It's an outstanding CB transceiver . . . available to you from Echo Communications at remarkable low terms! Clip the coupon below and mail it today. If you enclose the full purchase price, I'll pay all shipping charges.

ORDER TODAY!

ECHO COMMUNICATIONS, INC.
Box 223 • Cedarburg, Wisc.

☐ O. K. "Sandy", ship me_____new Cadre 500's immediately! Enclosed is $19.95 ea.—monthly payments will be $16.50 apiece. ☐ Full Payment enclosed.

☐ Please send me more info on the Cadre '500'.

Name ----------

Call (optional)----------

Address ----------

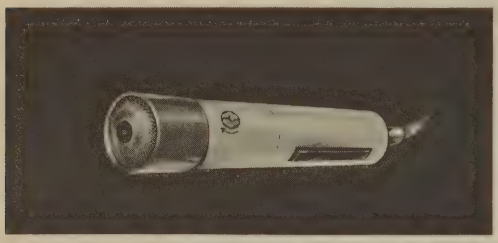
City & State----------

Turn to Card Insert—Page 12—Now!

-CB- SHOWCASE

NEW CB PRODUCTS OF THE MONTH

Communications, Inc., 33 Danbury Road, Wilton, Connecticut, leads off this month's new product parade with a product which should appeal to every CB'er who built the "Gould In-Mike Amplifier" described in the March, 1962 issue of CB Horizons.



Called "Big Mike," the new unit is a high output microphone with a built-in transistor audio amplifier inside the microphone case and handle. As the photo shows, the outside appearance does nothing to hint that inside this microphone is a transistorized amplifier. However, the mike has adjustable gain and tone controls which the operator may manipulate with his thumb of forefinger. The microphone is housed in anodized aluminum, and features a "squeeze to talk" bar. A miniature, mercury cell, battery pack, located inside the microphone, is good for many months of normal operation. Replacement cost of the battery is $1.44. "Big Mike" may be hung up on any metal surface by using an optional permanent magnet mount attached to the unit. Price of the microphone is $29.95. Contact Communications, Inc., for a full data sheet.

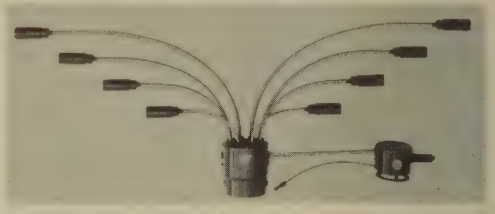
The same firm, Communications, Inc., has also announced that their popular Speakeasy Audio Compression unit is now available as a kit. The kit contains all of the component parts necessary to build the unit exactly to production line specs. Detailed step-by-step instructions and photos are provided. The kit is available for 115 vac, 12 vdc and 115 vac, 6 vdc operation. Price of the kit is $24.95.

Troubled with noise from your mobile unit? Maybe what you need is a "Noise Cancelling Microphone," such as the unit just announced by **Shure Brothers, Inc., 222 Hartrey Avenue, Evanston, Illinois.** The new model 488 "Sono-Bar" is described as a major breakthrough in noise elimination for mobile communications, or in other areas where the surrounding noise level is high enough to drown out the person using the microphone.

Three versions of the 488 are available. The 488-A is a high impedance model; the model 488-B is a low impedance model; and the model 488-T is a transistorized unit for direct replacement of carbon mikes.

All models feature rugged, impact resistant "Armor-Dur" cases. Prices start at $57.20 (list) for the model 488-A up to $72.50 (list) for the model 488-T. Contact the Sales Department at Shure for additional information.

Webster Manufacturing Company, 317 Roebling Road, South San Francisco, California, has a new mechanical noise system designed to "shield your auto engine" sealing in ignition noise so effectively that you don't know the difference when your car motor is switched on!



The Electro-Shield system is constructed of high-strength, non-corrosive materials and offers the additonal benefit of water-proofing the entire ignition system.

Descriptive information on the noise-suppression system, to end all systems(!) is available from Jim Adams at Webster.

Bainbridge Radio, 2649 Bainbridge Avenue, New York 58, New York, has developed an additional "dual conversion adapter" for another single conversion CB transceiver. Developed for the E. F. Johnson Messenger transceiver, the new unit brings additional selectivity to the Messenger user by supplying an additional stage of conversion and i.f. amplification between the sets existing i.f. system and detector stage. Complete instructions for adding the unit to your Messenger are included with the adapter. Price is $15.50, direct from the manufacturer.

NEW CB LITERATURE

Gardiner G. Greene, Sr., President of Browning Laboratories, Inc., Laconia, N. H., has announced a new all-products brochure which describes all of the firm's products in the CB communications field. The company is now cele-

brating its 25th year in communications equipment development and manufacturing. The 16 page brochure is available free of charge by writing to Browning Labs, Inc., 100 Union Avenue, Laconia, N. H.

Shure Brothers, Inc., 222 Hartrey Avenue, Evanston, Illinois, has a new brochure describing six newly developed Shure mikes. The brochure is free of charge, and available by writing the Sales Department at the company.

NEW PLANT

American Microphone Company is now in full operation from its new plant in Galien, Michigan. The company, recently sold by G. C. Electronics, Rockford, Illinois, is under the direction of George Riley, Vice President and General Manager.

The CBH Lab Reports . . .

WE TEST

* CITIFONE CD-7 TRANSCEIVER

The new CD-7 deluxe transceiver from *Multi-Products Company, 21470 Coolidge Highway, Oak Park, Michigan* is the latest advance from a firm with a long history in two-way communications equipment.

The unit has many desirable features for its $189.50 price tag, and should find a wealth of new supporters for the Citi-Fone line from coast-to-coast.

A photo cannot do the CD-7 justice. It is (by personal opinion of this writer) one of the most handsome CB transceivers to appear. The jet-black cabinet is highlighted by an attractive front panel, the left hand side of which is finished in an illuminated glass faceplate coated in both red and black numerals with the CB channels *and* operating frequencies. The center of the panel contains one of the new vertical S-meters which also functions on transmit as a tune-up meter. The bottom of the unit's front faceplate is polished aluminum with just the right accent of red and blacks. Does it work? As a matter of fact, it does! It looks pretty and works too! This is a 5 channel fixed tuned and transmit-plus-23 channel tunable job. The 5th channel on transmit comes through a front panel crystal socket so you can pick your own transmit channel from a

WHAT IS IT?

IT'S THE "MAC-WHIP"

The first basic improvement of both **receive** and **transmit** performance in mobile antennas—in years!

This is *not* just another antenna. This is a totally new, advanced concept in mobile antenna design. The McCullough-Aero MAC-WHIP actually provides *receive* as well as transmit gain in the mobile installation—where weak signal reception is the biggest single problem.

■ 12 feet of radiating material in a 6 foot whip ■ 2 loops ■ Screws into any standard 3/8"-24 thread mount ■ Tested and proven for months in Southern California by leading CB dealers, distributors and top mobile CB clubs. ■ The CB Mobile Gain Antenna that eliminates mobile trouble spots and shadow areas. Actually pushes the fringe area back, extending your coverage. ■ Will not bend back while your vehicle is in motion. Retains vertical polarization of your signal, producing greatly improved high speed mobile communications.

Only **$17.50**

MAC-67 "GUT-R MOUNT"

Now! A completely Retractable CB antenna mount. Attaches at car roof level—with NO HOLES IN YOUR CAR TOP! Any std. 3/8-24 thread whip mounts in just seconds. An excellent mount for the magnificent MAC-WHIP! Order Both Today! **$9.95**

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McCULLOUGH AERO CORP.

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Culver City, Calif.
Ph. EX 8-6293

DEALER INQUIRIES INVITED

Turn to Card Insert—Page 12—Now!

pocketful of crystals, if you don't have the needed channel mounted in the rig.

The transmitter and receiver are of straight forward design. Nothing exotic was uncovered by our lab engineer. But, by the same token, all circuitry is well proven as effective and high performing. The user should have no trouble getting the same good performance from the set that we did in two weeks of field trials.

The unit is sensitive, and transmitter output from the 6AQ5 final amplifier is a shade over 3.25 watts. Modulation is very clean. On receive, the audio is a noticeable amount better (when attempting to understand weak signals) than numerous other sets we have worked with.

The radio itself is small and compact; 9 inches wide, 10 inches deep and 4¾ inches high, it weighs just over 11 pounds ready to go.

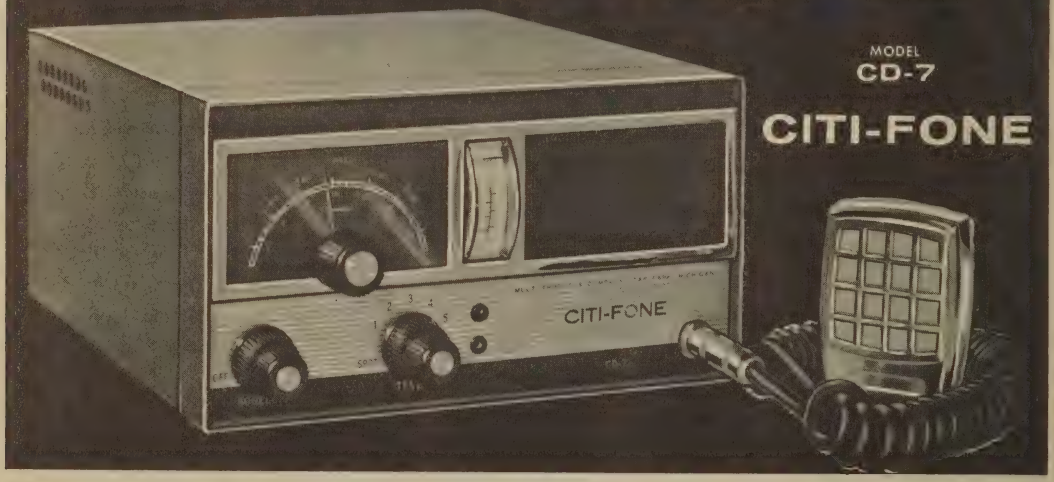
A jack is provided for headphones or external speaker operation. The S meter and r.f. output meter combination can be zero-adjusted with a control inside the set.

Jamie Jones, KEG3290, CBH Production Co-ordinator Enhances The CD-7 With A Smile!

The unit features crystal spotting with an audio tone on the channel frequency you are looking for. This makes spotting a snap because you are looking for a carrier with an audio note on it, not just a dead carrier (too many people transmit dead carriers!).

The transmitter has a loading control for proper matching to your antenna system, and, the receiver has a peaking control allowing you to make

The Standard for Comparison!



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See your nearest dealer today or write for full specifications to Dept. M-7

MULTI-PRODUCTS COMPANY • 21470 COOLIDGE HIGHWAY • OAK PARK 37, MICHIGAN

the best coupling between your receiver r. f. stage (6BJ6) and the antenna.

The unit is supplied with either 6 vdc and 115 vac power cords, or 12 vdc and 115 vac power cords. Conversion from 6 vdc to 12 vdc is no problem should you change cars at a later date.

Installation in the car is made superbly simple by Citifone's new mounting attachment (we have no part number or price on this) which straps around the CD-7 and bolts it to the dash. The CD-7 un-snaps from the strap arrangement by simply loosening a snap-catch.

RLM

Basics—Continued

be built into a single unit, as with four of the six units we will be discussing in another section of this report, or they may be separated into two component parts, as with two of the units under discussion.

The selective calling system depends on an attachment on the transmitting end of the circuit to transmit an electronic impulse of a certain pitch, duration and/or spacing. And, it depends on an attachment to your receiver which senses that electronic impulse and then acts on command from the impulse. The command may be to turn your receiver from "quiet to on," or, it may be to sound a buzzer or alarm thereby alerting you that you are being paged or called.

In one sense the selective calling system is nothing more than a sophisticated "super squelch" which keeps your transceiver quiet until your *own* selective call equipped unit calls you.

In another sense, selective calling incorporates a "super filter" into your transceiver-receiver filtering out all calls except those directed to your specific unit.

No matter how you look at selective calling, it does add up to privacy for the receiving end of a two-way CB communications circuit.

BULLETIN: ***To those who prefer or require a shortened antenna!***

The Mileage Maker, Jr. AT 54″ is the very best antenna for You!

Here's Why:

1. The conductor is in the center of the rod for maximum protection and durability
2. Center loading maximizes radiation resistance and efficiency
3. The whip material is reinforced fiber glass of continuous fiber construction.

All of which provides:

Improved signal to noise ratio (as much as 20db)
Increased operating gain and receiver sensitivity
FOR YOU this adds up to

AN EXTENDED, CLEAR OPERATING RANGE!

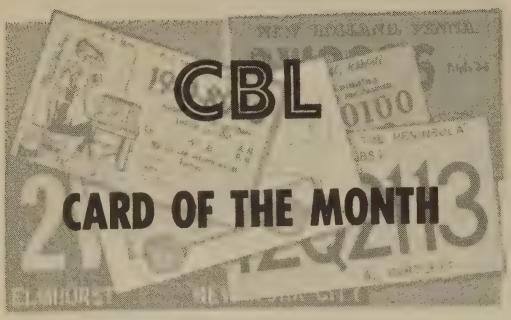
Order the Mileage Maker, Jr. today!

FG54CL	Mileage Maker, Jr.	List $15.85
FG102CL	Mileage Maker	List $18.95
LCF	Base loading coils for stainless whips	List $ 6.65

Enjoy better CB performance . . . visit your dealer or write

CREATIVE PRODUCTS INC.
6944 Plainfield Rd., Cincinnati 36, Ohio
Phone 791-0030

Turn to Card Insert—Page 12—Now!



Recently our CBL Card of the Month mailbox has been flooded with oversized CBL's of all shapes and sizes. One of the most clever of these came from KHA3430. Approximately 18 inches wide and 14 inches high, it closely resembled a piece of ordinary wall-paper. On closer inspection, it was a piece of ordinary wall paper! KHA3430 had his call, 10-20 and a few other pertinent things on the paper.

As George said . . . "When they ask me for a piece of wall paper, I send them just that!"

As cute as the idea is, it doesn't win any prizes because the card of the month must be of a size that we can reproduce here.

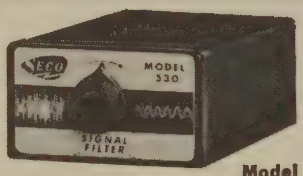
ANCEL ROBINSON, Jr.
2539 S. HOLLY AVE.

This month's winner has chosen an off brown and bright red to point out his location on the map. KFC1429 of Fresno, California wins our 6 months extension to CBH for November with this original and well thought out card.

Send your cards to CBL of the Month, P.O. Box 1557, Oklahoma City 1, Oklahoma.

Ozzie

Signal Filter



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ONLY $15.88 NET

- A SECO PLUS—smallest, most rugged noise limiter and controllable squelch on the market
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- Adapts to most CB transceivers using tubes—all AM superheterodyne receivers with 6 or 12 volts AC or DC and 150 volts "B" power supply—mobile or base station
- Styled to make a handsome matching set with the Seco Model 540 "S" Meter

See your electronics distributor or use coupon below to order your Signal Filter.

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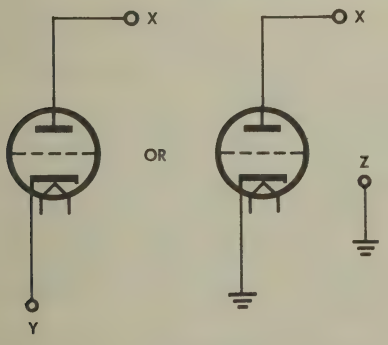
potential between the cathode of the final amplifier tube and the plate circuit of that tube. In other words, simply slapping a VTVM between the plate circuit of the final amplifier tube and the chassis (ground) gives you a reading in voltage to the final amplifier plate circuit which *can* be considerably different than placing that same VTVM between the plate circuit and the cathode of the tube.

You are not expected to understand the difference unless you have had considerable electronic schooling. But the example *is given* because at least four manufacturers *do* measure *their plate power input* by measuring the difference in voltage between the cathode of the tube and the plate of the tube. *Most* manufacturers however, ascertain it by measuring the difference from the plate to chassis ground.

What this means to you is this. By following the cathodes to plate method of measurement, it is possible to run higher plate voltage (and therefore more input power) than if you were measuring your plate power input from plate circuit to chassis ground.

We have heard several CB'ers comment "Sure that XYZ transceiver puts out a good signal. It runs 7 watts input. I know, I measured it!"

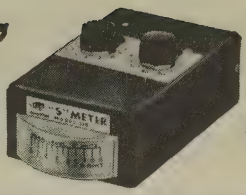
Uh-huh. They measured it . . . from plate circuit to *chassis* ground!



Which Way?

On the other side of the coin is the *manufacturer* who measures his plate power input from plate to ground. He probably tweaks it up for 4.9-5.0 watts

this "S" Meter



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Indicates your signal strength instantly

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- **A SECO PLUS—the only transistorized "S" Meter on the market . . . introduces no loading on AVC circuit!**
- **Ideal for CB, AM and FM tuners, ham, TV, and antenna orientation**
- **Illuminated "zero" to "30 db over 9" meter—also controls for zero set and sensitivity**
- **Completely self powered—operates on standard 9 v battery**
- **Can be built right into your set or attached anywhere with suction cup base**
- **Styled to make a handsome matching set with the Seco Signal Filter noise limiter and controllable squelch**

See your electronics distributor or use the coupon below to order your Seco Model 540 "S" METER.

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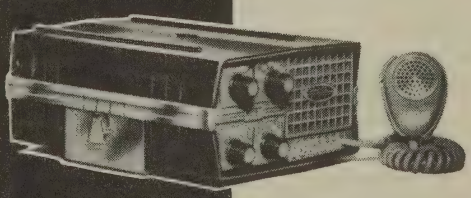
- Unique front panel transmitter crystal socket in addition to regular channels
- Pre-set automatic noise limiter



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- Superior squelch circuit
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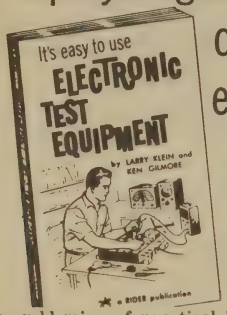
helps you get the most out of test equipment



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input, buttons it up and ships it off, not realizing (*apparently*) that by pure definition of plate power input (i.e. cathode to plate measurement method) he can be short-changing himself *and his customers* by up to 1.5 watts input (dependent upon the tube chosen as a final amplifier, and the circuit used).

Where does the FCC stand in all of this? Until now they have not entered the matter because to the best of our knowledge, the four (and perhaps more) manufacturers who have the technical schooling to realize that the pure definition can help them by pushing an extra ½ to 1 watt out into the antenna have not made this a commonly known fact. In other words, it behooves them to keep quiet!

So much for the simplest of all types of measurements, plate power input. From here on we get into some areas that are just plain debatable.

In other words, there are some areas of measurement where "it is simply a matter of opinion" how the gain, selectivity, sensitivity, etc. should be measured. And in areas like this two engineers can argue until the cows come home, and not be any closer to agreement than Russia and the United States over Nuclear Test Ban Inspection methods!

So rather than discuss specific methods of measurement, let's look at what the general terminology means to you —the CB'er.

RECEIVER SENSITIVITY

How sensitive a receiver is determines how weak a signal can be, and still be good copy by the operator listening to the signal.

In other words, in any receiver the gain of the unit and the noise of the unit combine to amplify both the received signal and bury the received signal, in the noise of the unit. What you are really interested in, then, is "How weak can a signal be and still be copied?"

There is no one answer to this question because of factors outside the scope of measurement. For example, the manufacturer can use a small black box which *transmits* a weak signal of a

Continued—Page 51

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POPULAR CB 10-CODES

10-1	Receiving poorly
10-2	Receiving well
10-3	Stop transmitting
10-4	OK
10-7	Out of service
10-8	In service
10-9	Repeat
10-10	Standing by
10-13	Advise road/weather conditions
10-20	What is your location?
10-33	Emergency traffic
10-36	Correct time
10-41	Switch to Channel
10-99	Cannot copy you

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INSTRUCTIONS:

USE THIS CARD TO ORDER LARGE 17 by 22 inch two color CB Transceiver Trouble Shooting Chart.

*Remove this card from the magazine, fill in the reverse side, and attach your check or money order for $1.00, place in envelope.

*Mail to: CB Trouble Shooting Chart
P.O. Box 1557
Oklahoma City 1, Oklahoma

known value, attaching the output of that box (called a Microvolter) into the input of your transceiver—*receiver*. He can decrease the output of the black box, all the time listening for and measuring the amount of signal he is hearing in his test receiver, until he reaches a point where he can *no longer detect* (or hear) the output of the black box. *At this point* he has *reached* the *threshold of sensitivity* of the receiver. By noting how much signal he was transmitting from the black box into the transceiver-receiver, he knows in terms of microvolts (millionths of a volt) how much signal input to the receiver is required to meet the threshold point of the unit's sensitivity.

In this case the manufacturer is trying only to determine how much signal is required to *over-ride* the noise of the receiver *itself*. He is not concerned with what will happen when he connects an antenna to the transceiver in a "normal" location and begins to pick up *additional noise* from near-by power lines, autos and the atmosphere itself (i.e. static).

Obviously, with the antenna connected to the transceiver, and more noise coming into the receiver, it will *now* take more signal applied to the same receiver input to be heard . . . because the signal must now be strong enough to over-ride both the receiver noise and the antenna picked-up noise.

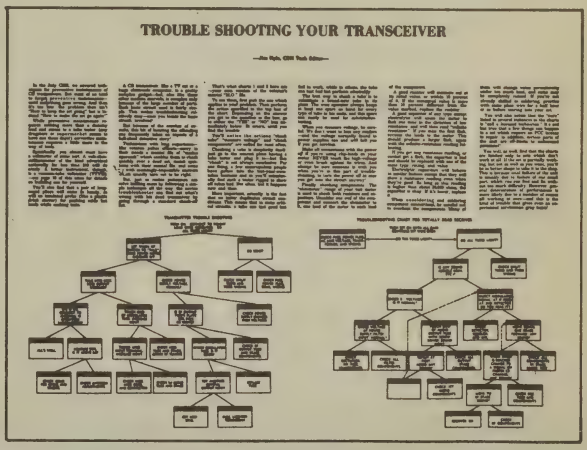
So, in practical application, what do receiver sensitivity figures mean? In terms of *pure* electronics, a unit which has a sensitivity threshold of 0.1 microvolts is very good. But, in terms of *practical* communications, a unit with a sensitivity of 1.0 microvolts is just as good! Why? Because antenna noise will more than make up the difference between 0.1 microvolt and 1.0 microvolt in 99.9999 (etc.) of the locations.

Now we enter into the realm of receiver noise limiters. Obviously, if a receiver noise limiter *were* able to *limit* all of the noise picked up by the antenna, a receiver with a sensitivity of 0.1 microvolts would be better than one with a sensitivity of 1.0 microvolts.

HERE IT IS!

THE HANDIEST CB WALL CHART SINCE THE CALL-AREA MAP!

CB TRANSCEIVER TROUBLE SHOOTING CHART



Hundreds of readers have written asking for this special chart. Last month's September CB Horizons carried a special 3 page article entitled "Trouble Shooting Your Transceiver." Now available in big 17" x 22" two-color wall chart form, this article included two very-very handy Trouble Shooting Charts for transceiver receivers, and transmitters. With this big 17 by 22 chart on your wall, you can quickly and easily locate trouble spots in your transceivers. Limited quantity available. Use the handy order card to the left of this announcement to order your 17 by 22 two-color Trouble Shooting Chart!

USE HANDY ORDER CARD

Price: $1.00 Each, postpaid

Turn to Card Insert—Page 12—Now!

But this would be equivalent to eliminating not only all of the noise (atmospheric noise included) but also eliminating all of the noise in such a way that the receiver sensitivity would not be reduced.

This is a matter for considerable discussion, and we will tackle that next month.

KEG2607

Datebook—Continued

The manhunt was on! Highway Patrols in all the States along the probable routes had already been alerted. The word had been passed to many CB units along the way. At noon the traveler was known to have been somewhere in east central Texas. And now "skip" had brought the word to the East Coast. Civil Defense headquarters here immediately alerted another group—the local hams. Several members of the Palmetto Amateur Radio Club responded. Through their efforts, amateurs in the neighboring states were contacted. They too, went right to work, relaying the traffic South and West.

The objective here was to get the message to as many points as possible along every likely route of travel, and there turn it over to local CB groups or individuals. The Highway Patrols, we knew, were on the job, but they must, perforce, have the man in sight before he could be contacted. We had the added advantage of possible radio communication direct with the party concerned.

The word must have spread rapidly through the amateur ranks, originating from many widely separated points. It was obvious that the Citizens Banders had not hesitated to call on the hams for assistance with their more powerful, longer range equipment. A listener on 20, 40, or 80 meters could have heard the traffic being relayed on AM, sideband, and CW. The Georgia RACES net, appraised of the situation, abandoned their prepared practice drill, and swung into action. The South Carolina Emergency Net, strictly AM, passed the word to the Sideband Net, serving both the Carolinas. Amateur Nets in all the surrounding States were alerted as they came on the air for their scheduled activities. Even the vast Virginia Net, with its far-flung affiliates, bent its energies to the task. Everywhere, one could hear the traffic being handled, QSO's being "broken", the situation being explained.

Sure there was some confusion. Of course there were a lot of parallel activities. Most certainly there was much duplication of effort. Frequently one could hear such remarks as, "Roger, OM, we already have that traffic, and

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Dept. 204

are relaying it on down the line". There was but one thought in mind; to spread the word all along the way, to get it through quickly, and to deliver it to as many points as possible.

The messages got through—that we know. Then the CB groups took over. They picked up the ball and went to town. Instances are known of units staying on the air, calling constantly, for hours on end. Many CB organizations stood an all-night watch. This man must be found!

At this writing we are in receipt of unconfirmed reports that the man was finally intercepted at the Alabama-Georgia line. Through what medium—we don't know. As a matter of fact, there are very few details in the entire episode of which we are absolutely certain. It is quite possible that the situation may have been greatly exaggerated. Perhaps it may have been distorted a bit. It is even within the bounds of possibility that the whole thing could have been a hoax.

If hoax it should turn out to be, the resulting activities surely did no one harm—and it most assuredly proved that ham and CB'er could work together toward a common goal. This is probably the first time that the two services have had the opportunity to cooperate in an activity of this magnitude.

All of this points up the tremendous advantages to be gained by forming local CB organizations, and the vital functions performed by monitoring and channel-coordinating committees.

In relating the story, we have purposely refrained from mentioning names. So many people participated, and there were so many examples of unselfish, unstinted effort, that no one individual can be singled out for credit. There must have been several hundred hams engaged in the search, and at least twice that many CB units.

On the amateur bands, this station copied many complimentary, remarks about the CB boys and their activities. So frequently were such observations made that if any of you guys think that the hams, by and large, look down on us Citizens Banders—we have news for you . . .

73,
R. H. Miller 6Q3954/WA4ECJ
Radio Communications Officer
Beaufort County Civil Defense

ABOUT CCM'S

The CB Horizons CCM program is expanding so fast that a period of re-adjustment is now underway. Consequently, the CCM column has been absent from the last two issues. CCM Coordinator John Krejc, 2W-4586, promises a special enlarged section next month, in the December issue.

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7035 Laurel Canyon, North Hollywood, California

We stock Hallicrafters transceivers. Antennas—AS/P and Hy-Gain. Our call is 11W7153 on channel 11 and we are open 9-9 six days per week, Sundays 10-4.

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656 South First Street, San Jose, Calif.

We stock Kaar-D-Phones, Johnson Messenger. Antennas—AS/P and Newtronics. Our call is KFC0669 on channel 11. Open six days per week.

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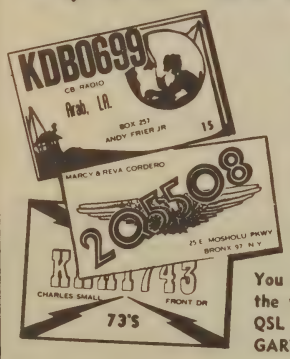

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6103 W. Ridgewood Avenue, Orlando, Fla.

We stock Browning, Hammarlund, Gonset, Transcendor, Webster and Kaar transceivers. Also, AS/P antennas, Webster antennas, Noistop, James Knights crystals. 6W5420 and we monitor "Natch-9" from 8 AM to 9 PM.

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1960 Peck St., Muskegon, Michigan

We stock General, RCA, Johnson, Globe, Eico, Pan-Com transceivers. Also, Hy-Gain, AS/P, Webster, Newtronics and Mark Mobile antennas. 19W1721 monitors channel 12 for calls. Open six days per week, Wed. night to 9.

SEIDEN SOUND, INC.

335 Central Avenue, Albany, New York

We stock Eico, Hallicrafters, Hammarlund, Johnson, Lafayette, Philmore and Vocaline transceivers. Antennas—AS/P, Lafayette, Mark Mobile and Master Mount. 9:00 to 5:30 daily, Mon., Thurs. & Fri. 'til 9:00 PM. 2A3819 on channel 11.

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6306 Beach Blvd., Buena Park, Calif.

We stock Lafayette and others in radios and antennas. 9-9 on Mon. and Fri., 9-6 other days, closed Sundays. Present call 11W1682, new call coming. We monitor channels 1 and 9.

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SWAN ELECTRONICS, INC.

342 North Gallatin St., Jackson, Mississippi

We stock Hallicrafters radios and AS/P and Hy-Gain antennas. 8:30-5:30 Mon. thru Fri. 8:30-12:00 Saturdays. 8Q1695 on channel 8

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2763 Bellewood St., Ann Arbor, Michigan

We stock RCA, General Radio Telephone, Johnson, ECI Courier, Kaar and Citiphone radios. Hy-Gain antennas, xtals, and freq. checks. Also FM "COMCO" sales & service. 8 AM-9 PM. 19W2655 on channel 13.

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3820 Almeda, Houston 4, Texas

We stock Globe, Cadre, Paco units. Sales and service for you! Also, modifications, frequency checks. FCC licensed technician on duty. 9Q0362 stands by on channel 11 from 8:30 to 5:30. Stop by and see us!

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321 E. Main Street, Sedalia, Mo.

We stock RCA, Gonset, Johnson and Globe transceivers. Antennas—Hy-Gain and AS/P. 17W1626 stands by on channel 11, 8 AM to 5 PM weekdays, 8 AM to noon on Saturday.

10-4 CB CENTER

139 Ewingville Road, Trenton 8, N. J.

We stock the ECI-Courier 1 and Hallmark transceivers. AS/P and Newtronics antennas, and all accessory lines. KBG1540 stands by on channel 11 six days per week.

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We stock Gonset, Hallicrafters and Sonar transceivers. Antennas—AS/P and Newtronics. 2A4403 stands by on channels 3 and 6 from 9 AM to 7 PM. Come by and see us!

LIFETIME ELECTRONICS INC.

1501 Adams Street, Toledo, Ohio

We stock E. F. Johnson, Hallicrafters, LaSalle and Eico transceivers. We also stock Master Mobile, Hi-Par and Newtronics antennas. 19Q9268 is our call, and we are open 8:30 to 5:30 Monday through Saturday.

Dealers listed in this portion of CB Horizons are participating in an educational program directed at helping the new CB licensee to become better adjusted to his new two-way radio. If you are a new (or old) CB licensee, you are urged to stop by and visit the nearest dealer to you listed in this section of CBH. Their experience in CB Radio can prove invaluable to you in your early days "on-the-air."

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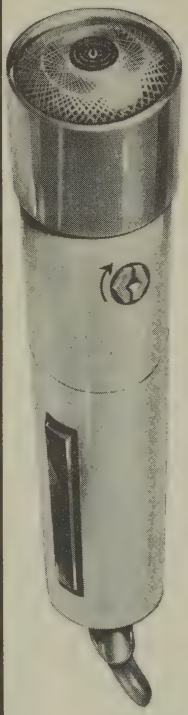

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NEW CB LOG BOOKS—Fifty pages of spacious entry forms. 65¢ postpaid, coins acceptable. Elanem, 116 Inwood, Plainfield, N. J.

CB-QSL CARDS—Brownie W3CJI/3W1974 3110C Lehigh—Allentown, Pennsylvania. Catalog with samples 25 cents.

FIBERGLASS ANTENNAS. Now from the team that patented today's fiberglass fishing rod and pioneered fiberglass golf clubs comes CB Antennas for mobile and base stations. Enjoy the performance of copper in our high modulus, electrically transparent fiberglass reinforced plastic. Quarter wave whip $6.95, Eight wave whip $5.75, base station $35.00. Francis Electronics, Pataskala, Ohio.

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ELENCO POWER GAINER—perfect condition. Two for $45.00 C.O.D. Harry Robinson, Superior, Nebraska.

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Channel 24

By

BOB COOPER, JR., KEG2607

Publisher-CB Horizons

An editorial appearing in the Qui-Co News (monthly publication of the *Qui-Co CB Radio League*, southeastern Pennsylvania) draws our attention to a problem that is taking on nationwide habits of late.

There has always been (and there will always be) two groups of CB users. The FCC took care of this when they established Part 19 radio for both personal and business uses.

We have our personal radio users, and we have the business radio users. To date it has been the business radio users complaining about the personal users. "Too much hamming" we have been told. "Overlong transmissions" we are told. "Unsubstantive messages" is a common complaint.

Now the shoe would appear to be on the other foot. A substantial number of personal users of CB are complaining that "commercial-business users" are using their radios as sales tools. The prime offenders *seem* to be CB service and sales centers who get on the air to "advertise" their services. To date no CB service center has lost its license for using his CB installation as a means of promoting and advertising his business, but a few have been cited and warned.

We all know the rules. And we all know that a running string of sales messages and advertisements on channel 11 is not included in *permissible communications.*

Let's see that this situation corrects itself before the FCC does a little correcting for us. Certainly as a commercial user of CB radio you have learned what an invaluable tool you have at your disposal. Think just for a moment —where would *you* be without it?

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CITIZEN BAND CLASS "D" CRYSTALS 3rd overtone — .005% tolerance — to meet all FCC requirements. Hermetically sealed HC6/U holders. ½" pin spacing. .050 pins. (Add 15c per crystal for .093 pins). **$2.95 EACH**

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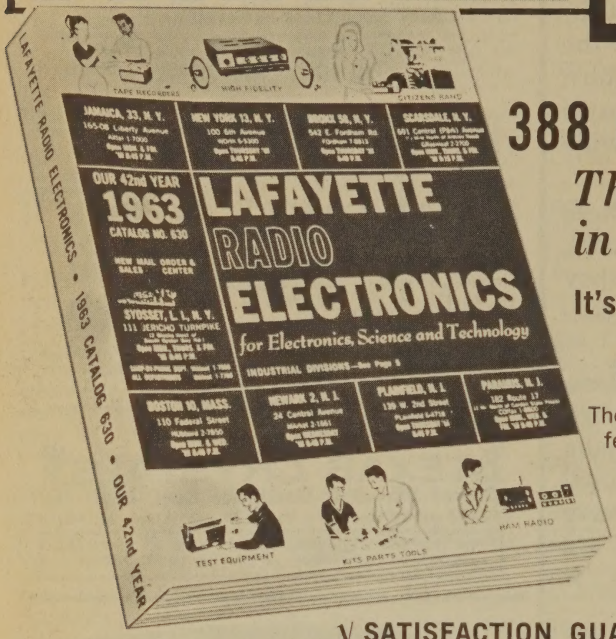

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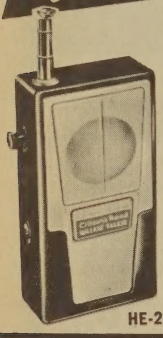

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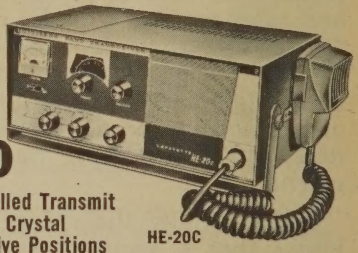

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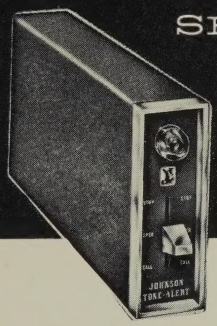

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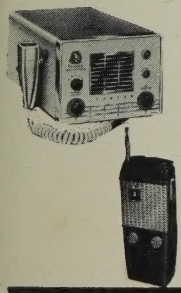

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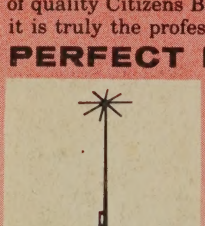

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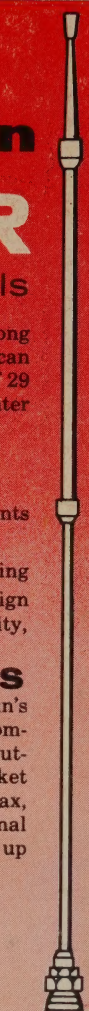

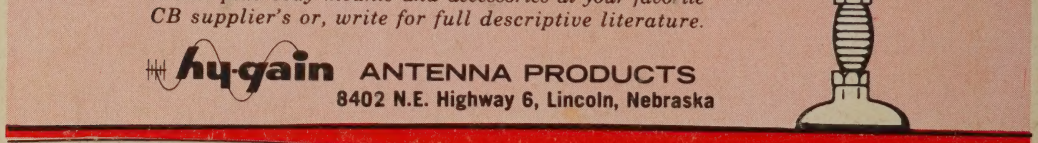

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